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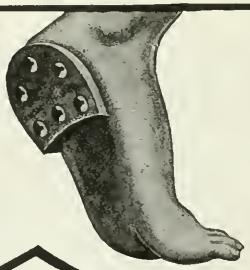

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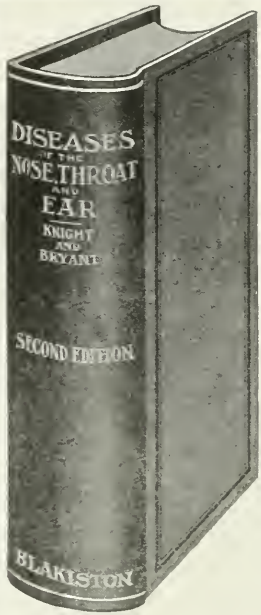

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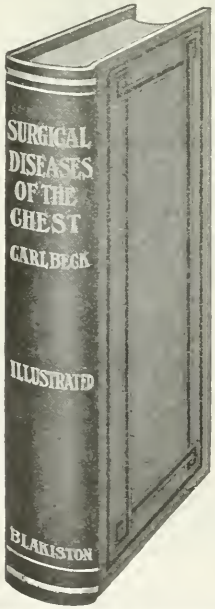

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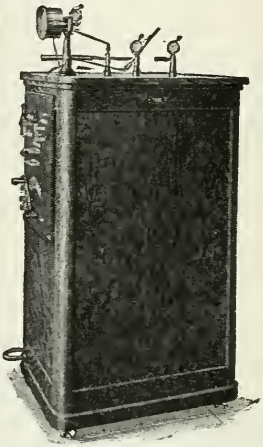

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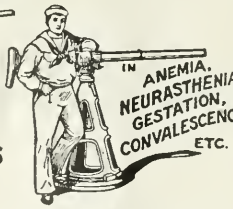

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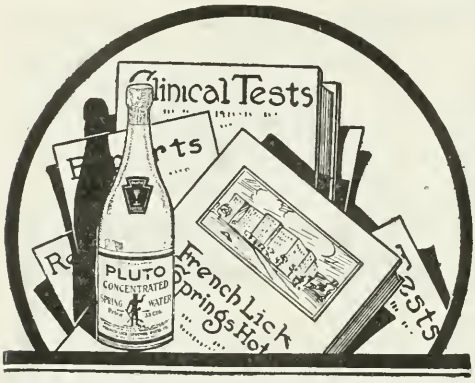

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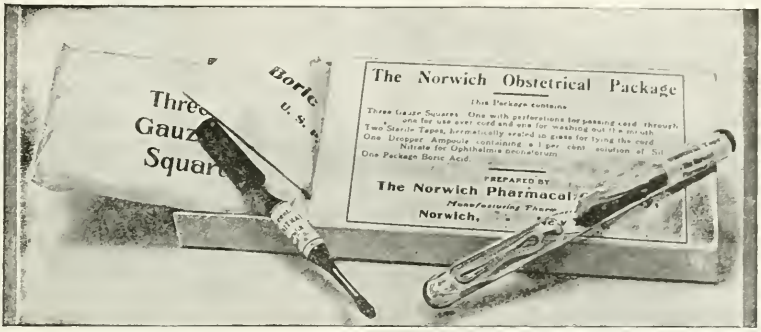
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Original Communications

THE MEDICAL SERVICE IN THE BRITISH ARMY.*

BY T. H. GOODWIN, C. M. G., D. S. O.,

Colonel, Royal Army Medical Corps; Member of the British Commission to the United States.

In time of peace the officers of the medical service in the British army number about one thousand, ranging in rank from lieutenant general (two) and major general down to lieutenant, which is the rank an officer receives on commission. These numbers have necessarily been enormously increased during the present campaign, and the number of officers in the medical service now totals over 12,000. This enormous increase has been made by the granting of "temporary commissions" to civilian medical practitioners. Some of these, men of high standing and professional reputation, were granted temporary commissions as colonel, lieutenant colonel, major, or captain, and were appointed to positions as consulting surgeons or physicians, specialists in neurological, ophthalmological, or other branches of the profession, while the great majority were given commissions as first lieutenants for a period of one year; on the termination of the first year most of these officers reengaged for a further period of one year and, on doing so, were promoted to the rank of captain. An officer, on being commissioned as first lieutenant, receives pay at the rate of twenty-four shillings per diem. The organization for the collection, evacuation, and treatment as at present carried out by the British medical service is as follows:

1. *The medical service with a division* comprises the assistant director of medical services; the field ambulances; the sanitary section; the regimental medical establishments. The assistant director of medical services has the rank of full colonel; he commands the Royal Army Medical Corps of the division, and is responsible for all questions connected with sanitation, the collection and evacuation of sick and wounded, establishment of dressing stations, and numerous other matters. He has a staff of clerks and an assistant, a major or captain in the R. A. M. C., three units of field ambulances in a division; they are divisional units, under the command of the A. D. M. S. If a brigade should be detached from the division for independent operations the A. D. M. S. will probably detail a field ambulance to accompany and operate with it. Each field ambulance is composed of nine medical officers, one quartermaster and 238 persons of other ranks, fifty-four horses, three motorcycles, seven motor ambulance wagons, three horse drawn ambulance wagons, and some wagons and carts for the carriage of equipment, tentage, and stores. A field ambulance is divided into a tent and a bearer division. The tent division, which establishes the advanced and main dressing stations, consists of six medical officers with nursing, dispensing, and clerical personnel. The bearer division consists of three medical officers, some noncommissioned officers and 108 stretcher bearers, forming, according to regulations, eighteen squads, each squad consisting of six bearers with a stretcher; in practice, however, the 108 stretcher bearers are usually formed into twenty-seven squads, each squad consisting of four bearers with a stretcher. The stretcher is almost identical in pattern with the "litter" as used in the United States army. The sanitary section consists of one officer, usually a medical officer of health, and twenty-five other ranks. The noncommissioned officers and men in a sanitary section must have had previous experience and training in sanitary or laboratory duties, such as sanitary plumbing, work in laboratories, etc. Each sanitary section is furnished with disinfecting plant, consisting of a double Thresh installation mounted on a motor truck, known as a Foden disinfecting lorry. The duties of a sanitary section are very extensive and important, and comprise such work as disinfection of clothing, installation of laundries, installation and working of divisional baths, and supervision of sanitation generally. The regimental medical establishment for an infantry battalion consists of one medical officer, one private and four men, R. A. M. C., for water duties. The battalion also furnishes from its ranks sixteen stretcher bearers with eight stretchers, this number being frequently considerably augmented when an attack is expected. The medical officer is furnished with one horse cart for the purpose of carrying the medical equipment, which consists of one pair of field medical panniers, one medical companion, and one surgical haversack; the equipment is very complete and fulfills all requirements. The regimental medical officer establishes the regimental aid post which, during the present phase of warfare, is usually situated in a bombproof dugout, near regi-

*Written specially for the NEW YORK MEDICAL JOURNAL.

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mental headquarters, which are probably situated a few hundred yards behind the front line trenches. At this regimental aid post the regimental surgeon attends to casualties as they are brought in by the regimental stretcher bearers, adjusts dressings, arrests hemorrhage, immobilizes fractures, and sees that the men are made as comfortable as circumstances permit, pending their early removal by the stretcher bearers of the field ambulance bearer division who are collecting and removing the men from the regimental aid posts to the advanced dressing station of the field ambulance tent division, which is situated probably a mile or so farther to the rear. At the dressing station the patient receives a hypodermic injection of 500 units of antitetanic serum, the first field dressing is removed, and the wound is thoroughly dressed, splints are readjusted if necessary, and the wounded man is fed

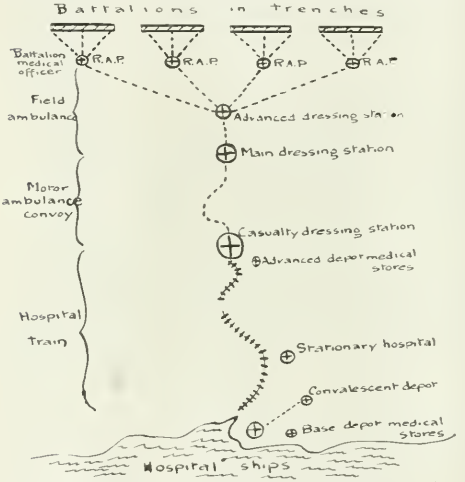

FIG.—Diagram illustrating evacuation of casualties from front line to base.

and prepared for removal by the motor ambulance convoy to the casualty clearing station (see diagram). Few operations other than those necessary for the arrest of hemorrhage, tracheotomies or operations of a very urgent nature are performed at a dressing station. The system of evacuation briefly is as follows: A man wounded in the front line trench is taken to the regimental aid post by the regimental stretcher bearers, who have applied the first field dressing. From the regimental aid post he is taken to the advanced or main dressing station by the stretcher bearers of the field ambulance bearer division, or by the horse or motor ambulance wagons of the field ambulance if these vehicles are able to get forward. From the dressing station he goes to the casualty clearing station by the motor ambulance convoy; from the casualty clearing station to the stationary or general hospitals by the hospital train, and from these hospitals to home base hospitals by hospital ship.

2. Motor ambulance convoy.—This unit is composed as follows: Four officers, R. A. M. C.—the senior commands the unit; eighteen other ranks, R. A. M. C.; four officers and 157 other ranks, Army Service Corps, attached for duty with the mechanical vehicles; fifty ambulance cars; four touring cars; seven motorcycles; three lorries; one workshop lorry. The motor ambulance convoy is detailed for duty in any particular area by the administrative medical officer with the headquarters of the corps or army, the former being a colonel, Army Medical Service, the latter a surgeon general.

3 Casualty clearing station.—The personnel of a casualty clearing station consists of seven medical officers, one quartermaster, and ninety persons of other ranks. A varying number of nursing sisters are also detailed for duty with a casualty clearing station, and the staff of medical officers is augmented during times of stress as when a heavy engagement is in progress. Nursing sisters do not do duty nearer the front line than the casualty clearing station, this unit being, as a general rule, situated at a distance of from five to eight or ten miles behind the firing line. At the casualty clearing station a very large amount of operating is performed. One of these units is usually set apart in each area for abdominal surgery, and all cases of abdominal wounds are transmitted to it as rapidly as possible from the front. The Carrel-Dakin treatment is steadily increasing in vogue and is now usually commenced at the casualty clearing station and continued in the hospital trains and base hospitals. A complete x ray equipment is provided at casualty clearing stations, and, as may readily be imagined, a large amount of this work is performed. In addition to the x ray installation at the casualty clearing stations, stationary and general hospitals, a considerable number of mobile x ray outfits mounted on a three ton lorry chassis have been instituted. A casualty clearing station is invariably situated near a railway station in order that patients may readily be transmitted to the base via hospital trains.

4. Hospital trains.—The personnel required for a train capable of conveying 396 lying down cases consists of three medical officers, three nursing sisters, and forty-seven persons of other ranks.

5. Stationary hospitals.—A stationary hospital of 400 beds, which may be expanded to considerably more than this number, requires the following staff: twelve medical officers, one quartermaster, twenty-seven nursing sisters, and ninety-eight persons of other ranks.

6. General hospital.—A general hospital contains 1,040 beds, but is capable of very great expansion beyond this number, the staff being augmented correspondingly. The personnel varies, according to the size of the hospital, as regards officers, sisters, and other ranks. Both stationary and general hospitals are very fully equipped as regards surgical, medical, bacteriological, x ray, and other departments. Every variety of professional work is here seen and an enormous amount of operative procedure of every variety is carried out. From these hospitals patients are either discharged to duty, transferred by hospital ship to England, or transferred to convalescent depots in the vicinity of the hospital.

7. Convalescent depots.—These are large hutted or tented camps situated at the various bases, ca-

pable of accommodating several thousand men at a time. Each camp is organized so as to facilitate, by every possible means, the improvement of the mental and physical condition of convalescent patients before their return to the fighting line. Football and cricket fields, libraries, gymnasiums, recreation rooms, etc., are provided, and the men do carefully graduated marches daily. These convalescent depots have proved of immense value in improving the health and physical condition of men who have been discharged from hospital yet are still not physically fit for the strenuous duty at the front line. Being entirely medical units the men are under close medical supervision, so that exercises, marches, etc., can be carefully graduated.

8. Medical and surgical supplies.—These are shipped overseas from England to base depots of medical stores, which are large stores situated in suitable buildings at the various bases. From these depots supplies are sent forward, as required, to the advanced depots of medical stores, which are situated at or near the various railheads, usually close to a casualty clearing station. The amount of medical and surgical equipment and stores required for a modern army is enormous, as may readily be imagined when the huge number of medical units in the field is taken into consideration. To mention a few items: Nearly sixteen million c. c. of vaccine, including twenty-one varieties, have been issued, and nearly five million doses of various serums. Practically the whole of the vaccines have been manufactured in the vaccine department of the Royal Army Medical College in London. During three months alone nearly 200,000 x ray plates and 600 x ray tubes were furnished; 243 x ray outfits and seventeen motor bacteriological laboratories have been supplied. During the first two and a half years of war 35,000 miles of gauze and over 3,000 tons of cotton wool were furnished to the various hospitals and depots. These few examples may serve to show the enormous amount of medical supplies needed in a modern campaign.

In briefly reviewing the Royal Army Medical Corps as a career for a young medical man, one may safely say that it is one which offers a happy life, with great opportunities for original and useful work. Every opportunity and encouragement is given for the perfection of work in special lines such as public health, bacteriology, tropical diseases, etc., and the work of Bruce, Leishmann, and others are examples of what may be done by army medical officers. Between the eighth and twelfth year of his service every officer undergoes a nine months' course in London, working at the Army Medical College and at various London hospitals. On the completion of this course he undergoes an examination for promotion to the rank of major. During this nine months' course of instruction the officer selects one special subject, e. g., ophthalmology, advanced operative surgery, gynecology, public health, bacteriology, etc., and undergoes examination for qualification as a specialist in that particular line. According to the result of his examination he is eligible for "accelerated promotion." From this time onward he is promoted to the higher ranks by "selection." The British army medical service has learned many lessons and profited largely from the experience of the present war and it is eagerly looking forward to cooperation and collaboration with the brother medical service of the United States army, from which service it has without any doubt very much to learn.

THE PSYCHOPATHOLOGY OF PROSTITUTION.

By Morris J. Karpas, M. D.,
New York,
Chief of Clinic, New York Neurological Institute, Third Division; Medical Examiner in Psychiatry, Psychopathic Clinic of Children's Court, City of New York; Instructor in Nervous Diseases, Cornell University, Medical Department.

INTRODUCTION.

Of all the social psychiatric questions, prostitution is one of the most important because of its relation to society. The solution of the problem, however, is complex, because of the many underlying factors that determine this abnormal reaction. Indeed, this issue is not purely psychological or medical, but it embraces the economic, sociological, and penal phases, knowledge of all of which is essential for thorough understanding of this subject.

It should be borne in mind that the practice of prostitution is not a product of modern civilization, for it has existed ever since the marriage institution. In early Biblical times prostitution had already been engaged in, and we find in Genesis passages to this effect: "When Judah saw her [his daughter-in-law, Tamar] he thought her to be a harlot; because she had covered her face. And he turned unto her by the way, and said, Go to, I pray thee, let me come in to thee!" And in Numbers: "And Israel abode in Shittim, and the people began to commit whoredom with the daughters of Moab. And they called the people unto the sacrifices of their gods; and the people did eat, and bowed down to their gods. And Israel joined himself to Baal-Peor; and the anger of the Lord was kindled against Israel. And the Lord said unto Moses, Take all the heads of the people and hang them up before the Lord against the sun that the fierce anger of the Lord may be turned away from Israel." Likewise in Deuteronomy: "There shall be no whore of the daughters of Israel, nor Sodomite of the sons of Israel. Thou shalt not bring the hire of a whore, or the price of a dog, into the house of the Lord thy God for any vow; for even both these are abomination to the Lord thy God." It is interesting to note that the strong Hebraic opposition to prostitution was based upon the fact that it disturbed the family relationship, encouraged excessive venery by reason of the numerous sexual objects, and produced strife which was common at that time.

It is well known that man requires friends all his lifetime. Aristotle explains this in the ninth book of his Nikomachean Ethics. When man is in good health and prosperous, he enjoys the company of all his friends; in the time of trouble he is in need of them; in old age, when his body is weak, he is assisted by them. This love is more frequent and more intense between parents and children and among other relations. Perfect love, brotherhood, and mutual assistance is only found among those near to each other by relationship. The members of a

family united by a common descent from the same grandfather or even from some more distant ancestor have toward each other a certain feeling of love, help each other, and sympathize with each other. To effect this is one of the chief purposes of the Law. Professional harlots were therefore not tolerated in Israel (Deut. 23:18) because their existence would disturb the above relationship between man and man. Their children are strangers to everybody; no one knows to what family they belong; nor does any person recognize them as relatives. And this is the greatest misfortune that can befall any child or father. Another important object in prohibiting prostitution is to restrain excessive and continual lust; for lust increases with the variety of its objects. The sight of that to which a person has been accustomed does not produce such an ardent desire for its enjoyment as is produced by objects new in form and character. Another effect of this prohibition is the removal of a cause for strife; for if the prohibition did not exist, several persons might by chance come to one woman and would naturally quarrel with each other; they would in many cases kill one another or they would kill the woman. This is known to have occurred in days of old, "as they assembled themselves by troops in a harlot's house" (Jer. 5:7). In order to prevent these great evils and to effect a great boon that all men should know their relationship to each other, prostitutes (Deut. 23:17) were not tolerated, and sexual intercourse was only permitted when a man has chosen a certain female and married her openly; for if it sufficed merely to choose her, many a person would bring a prostitute to his house at a certain time agreed upon between them, and say that she was his wife (1).

The relation of prostitution to primitive religious worship is well known (2). The underlying motives of such rites was to discharge a sacred religious function for a definite mission. All women in Cyprus before marriage were compelled to have sexual relations with strangers at the sacred place of the goddesses, commonly known as Aphrodite, Astarte, etc. In many parts of Australasia similar customs were followed. In Babylon women, no matter whether rich or poor, were obliged once in their life to consort with strangers at the temple of Mylitia and the money thus earned was dedicated to the goddess Ischtar or Astarte. In the words of Frazer, "The sacred precinct was crowded with women waiting to observe this custom. Some of them had to wait there for years. At Heliopolis or Baalbec in Syria, famous for the imposing grandeur of its ruined temples, the custom of the country required that every maiden should prostitute herself to a stranger at the temple of Astarte, and matrons as well as maids testified their devotion to the goddess in the same manner. The Emperor Constantine abolished this custom, destroyed the temple, and built a church in its stead" (3).

The women in Phœnicia practised prostitution for religious purposes, as they were imbued with the idea that by such conduct they would ingratiate themselves into the graces of the goddess. In Byblus there was a custom that the people had to shave their heads every year as an expression of mourning for Adonis. Those women who refused to do so were obliged to have relations with strangers for money which was utilized for the goddess. Sumner (4) refers to the existence of sacred harlotry in Egypt and under the Cæsars.

Survivals of sacred harlotry are found in historic Egypt. Even under the Cæsars the most beautiful girl of the noble family of Thebes was chosen to be consecrated to the Temple of Ammon. She gained honor and profit by the life of a courtesan, and always found a grand marriage when she retired on account of age. In all the temples there were women attached to the service of the gods. They were of different grades and ranks and were supposed to entertain the god as harem women entertained princes. In the temples of goddesses women were the functionaries and obtained great honor and power.

The ethical phase of prostitution has always been an object of considerable discussion, and it is interesting to note that there are moralists who uphold this practice. Indeed, Augustine spoke in behalf of prostitution and Aquinas (5) said: "Prostitution in towns is like the sewers in the palace; take away the sewers, and the palace becomes an impure and stinking place." Lackey defends it as follows:

Under the circumstances, there has arisen in society a figure which is certainly the most mournful, and in some respects the most awful, upon which the eye of the moralist can dwell. That unhappy being whose very name is a shame to speak; who counterfeits with a cold heart the transports of affection; who submits herself as the passive instrument of lust; who is scorned and insulted as the vilest of her sex, and doomed, for the most part, to disease and abject wretchedness, and an early death, appears in every age as the perpetual symbol of the degradation and sinfulness of man. Herself the supreme type of vice, she is ultimately the most efficient guardian of virtue. But for her, the unchallenged purity of countless happy homes would be polluted, and not a few who, in the pride of their untempted chastity, think of her with an indignant shudder, would have known the agony of remorse and of despair. On that degraded and ignoble form are concentrated the passions that might have filled the world with shame. She remains, while creeds and civilizations rise and fall, the eternal priestess of humanity, blasted for the sins of the people.

Others maintain that prostitution "is a necessary evil, and at best a beneficent institution, the bulwark of the home, the inevitable reverse of which monogamy is the obverse" (6).

THE NATURE AND CHARACTER OF PROSTITUTION.

The underlying nature and character of prostitution has been very carefully investigated by students of political economy and psychology. There are two conceptions. One, advanced by the economist, is that prostitution is the result of economic and social conditions; the other, maintained by the psychologist, is that this abnormal phenomenon has its root in the mental structure of the individual.

The economic phase.—Such observers as Bebel, Hirsch, Parent-Duchatelet, and others support the economic theory on the ground that a large majority of prostitutes are domestic servants, factory and shop girls, waitresses, saleswomen, and other underpaid wage earners. Since their occupations are irregular and seasonal, they are forced to embrace prostitution because of economic stress. Parent-Duchatelet states (7): "Of all the causes of prostitution, particularly in Paris, and probably in all large cities, none is more active than lack of work and the misery which is the inevitable result of insufficient wages." In Berlin it was also noted that during the hard times the number of prostitutes were on the increase. This is also true of America and Japan. According to Maude Miner (8), over fifty per cent. of the women investigated by her were employed in factories or as domestic servants; and the other girls had positions in stores, restaurants, offices, etc.

Comparing the percentages of these prostitutes who had been in different kinds of work to the percentage of women wage earners in the same occupations in general popula-

tion of New York city, according to the Census of 1910, we find that servants, waitresses, saleswomen, clerks in stores, and theatrical workers contribute more than their quota to prostitution; that factory employees and telephone operators contribute almost exactly the percentage we should expect; and that clerical workers, bookkeepers, stenographers, dressmakers, and milliners contribute less than their share. It is significant that all the occupations contributing less than their quota require skill and preparation for work. Wages received by girls before entering prostitution were for the most part low.

On the other hand, there is sufficient statistical evidence to the effect that the economic element is much exaggerated by the socialistic economist and social service worker. Strömberg (9) found that out of 462 prostitutes there was not a single case in which the economic cause was the determining factor. Welander (9) in his studies of prostitutes in Stockholm found that sixty per cent. of them were previously in domestic service and were in comfortable circumstances. Leonhard's results (9) are practically the same. In the 100 Düsseldorf prostitutes, poverty was not considered as a cause. The same author examined 500 other records in Düsseldorf and likewise could not establish economic reason for prostitution. Hammer's investigations (7) reveal that out of ninety registered German prostitutes there was not a single case in which low economic conditions played any rôle. In Bedford Reformatory, out of 279 cases, in only nineteen were economic conditions thought to be responsible for prostitution. To quote Kneeland (10): "The surprising thing is that very few directly economic reasons are given. It might be supposed that in friendly conversation a girl would wish to make the greatest possible excuse for herself, and that the one most ready to hand would be the inability to earn a living. But in only nineteen cases was this given as an excuse; and by referring to a similar table for street cases, it will be noticed that only 139 out of 1,106 gave a directly economic reason."

There is no doubt that undue stress is laid on the economic and social issue, and that the evidence so far adduced is not conclusive and adequate. The very fact that the large majority of prostitutes come from domestic service should serve as a strong argument against the economic theory. It should be borne in mind that servants are always in great demand; they are fairly well paid, and during their employment they are provided with shelter and food. Another important point to be emphasized is that in instances where these women were driven to prostitution because of poverty, they were in reality constitutionally inefficient to compete with their fellow beings; in other words, the so called economic factor should be looked upon as a symptom rather than a cause of this condition.

The mental phase.—With the advent of scientific psychiatry, studies of social psychopathological phenomena have received more careful and profound investigation. Prostitution was one of the subjects that engaged the attention of the psychiatrist. Unfortunately, however, the studies have only been directed along the objective lines; either too much emphasis was laid on the purely anthropological relations or wholly on intellectual phases of mental activity. Lombroso was the first to call attention to the fact that prostitution is a natural expression of a criminal predisposition—in other words, an expression of a congenital morbid instinct. In the words of Lombroso (11): "Prostitution largely takes the place of crime for women, thus explaining why women seem less criminal than men, and also giving a probable reason why female criminality is greatest in all ages when prostitution no longer offers a profession." Thus, according to Lombroso and his pupils, prostitution is a type of moral imbecility closely related to constitutional criminality. Aschaffenburg, Lombroso's strong opponent, admits that there is a strong relationship between the male criminal and the prostitute. Indeed, the study of the Jukes family forms an excellent illustration: the female element was represented by harlots, whereas the male members were criminals, alcoholics, etc.

Tarnowsky (12), a pupil of Lombroso, studied prostitutes in Russian prisons and found that they presented striking anatomical stigmata peculiar to the prostitute. Bonhoeffer (13) found that out of 190 prostitutes, fifty-three were feebleminded, 102 displayed anatomical hereditary stigmata of degeneration, most of them had one or both parents alcoholic, and in one third of the cases no definite mental anomalies were noted. Kneeland's (14) material consisted of 647 cases, twenty-one insane and 107 distinctly feebleminded.

Not all of our 647 cases have been examined by our psychologist. One hundred and sixteen, however, have had laboratory tests of various sorts. Among these tests all have been given the Binet tests. The result has been as follows:

MENTALITY BY BINET TEST.

Showing mentality of 5 year old child	2
Showing mentality of 6 year old child	1
Showing mentality of 7 year o'd child	6
Showing mentality of 8 year old child	6
Showing mentality of 9 year old child	29
Showing mentality of 10 year old child	44
Showing mentality of 11 year old child	26
Showing mentality of 12 year old child	2

The forty-four who have the mentality of a ten year old child and under were unhesitatingly pronounced mentally defective. The seventy-two showing mentality from ten to twelve years may possibly not be so called. The sixty-seven others included among the 107 are those so mentally defective that there can be no question as a matter of observation. Fifty-two others are distinctly borderline cases. This is the group which gives the most trouble in all reformatory institutions. It is safe to say that ninety per cent. of all disciplinary difficulties come from cases of this sort. They can be easily divided into at least two groups. Thus divided, twenty-six are girls who can be taught very little in school, whose general intelligence is low, but who may perhaps be able to learn a certain amount of manual labor; these cannot "stay good" any length of time. The other twenty-six are those who do well in school, are capable of mastering even such subjects as algebra and bookkeeping, but who have no moral sense or continuity of purpose. Eleven others are also properly in this class, but differ from the two preceding groups in the character of their instability. If they were boys, they would be tramps. They are all girls who have run away from home, sometimes a number of times, as well as from any place where they are put to service.

The foregoing figures mean that 103 individuals, or 20.8 per cent. of the number studied, are decidedly mentally defective. This is an extremely conservative estimate.

Maude Miner (15) found that only one third of the women whose cases she investigated were feebleminded. Goddard (16) states: "As to actual statistics on this subject, we have almost none. One very significant record comes from Geneva, Illinois, made by the same Doctor Bridgman whom

we have already quoted. She found that out of 104 girls in the reformatory who were committed for immoral life, ninety-seven per cent. were feebleminded. This does not by any means indicate that ninety-seven per cent. of prostitutes are feebleminded, because it is only natural to expect that the feebleminded ones would be the ones to be caught and sent to an institution. This figure, nevertheless, gives some idea of the prevalence of feeblemindedness in this traffic. Many competent judges estimate that fifty per cent. of prostitutes are feebleminded." Walter Clarke (17), the field secretary of the United States Social Hygiene Association, collected 1,872 cases of prostitutes who were examined according to the Binet-Simon test, and the result shows a wide variation of feeblemindedness ranging from twenty-nine to ninety-seven per cent. In Magdalen Home, during the year 1916, ten per cent. of its inmates were pronounced feebleminded.

The sexual life in the prostitute offers another interesting topic of study. Such investigators as Riccardi, Lombroso, Parent-Duchatelet, von Maschka, and Moraglia observed not only homosexuality among them but also sadism, masochism, fetichism, sodomy, and sexual excitement with masturbation following the drinking or perceiving of the odor of men's urine or feces. Again Lombroso encountered frigidity among prostitutes. Merrick (18) studied 16,000 prostitutes in London and found that only few of them adopted prostitution because of intense sexual desires. Moraglia (19) found masturbation prevalent among the 180 prostitutes in the North Italian brothels, and he noted the same thing among the twenty-three prostitutes of the higher grade. Homosexuality is not as common as masturbation, yet it is of frequent occurrence. It is more prevalent in England than in France. Anna Rüling (20) declares that twenty per cent. of the Berlin prostitutes are homosexuals, and Moll (21) estimates twenty-five per cent. Hammer (22) found that twenty-three out of twenty-five prostitutes in reformatories practised homosexuality. Hirschfield (23) states that the Berlin prostitute frequently accosts better class women on the street, and accepts very small or no remuneration for sexual relations with their own sex. Freud (24) maintains that the polymorphous pervert can be demonstrated in a large number of prostitutes. "The same polymorphous or infantile disposition fits the prostitute for her professional activity, and in the enormous number of prostitutes and of women to whom we must attribute an adaptation for prostitution, even if they do not follow this calling, is absolutely impossible not to recognize in their uniform disposition for all perversions the universal and primitive human."

GENERAL INTERPRETATIONS.

Before attempting to interpret this vital and intricate problem, it would be advisable to refer to special statistical data obtained from the Magdalen Home. The material consists of twenty-five women who were committed to that institution for immorality. Seventeen of them began to lead an immoral life between the ages of sixteen and twenty years; and eight between twenty and twenty-four. The direct cause for this life was "a desire for a good time" in seven cases; eight were seduced "in bad company"; four were "in need of money"; four "for the love for a man"; and only in two feeblemindedness figured as a cause. Three of them were legally married; the civil condition in three was questionable; and nineteen were single. In looking over the records of the twenty-three women who were not feebleminded, one finds that these cases presented signs of mental inferiority which was characterized by instability, suggestibility, waywardness, lack of responsibility, lack of feeling, etc. In all of them, the question of an actual economic cause was of no significance.

The following cases will serve as illustrations to demonstrate the development of prostitution:

Case I.—J. was a woman thirty-five years of age, of a limited education. At the age of thirteen years she began to work in a factory, earning from $8 to $12 a week. At the age of fifteen and one half years she had her first sexual experience, and soon following this she embraced prostitution. It is important to note that she was not pregnant at that time. Speaking of that particular experience she said, "It was by force and not by force." She admitted that her seducer encouraged her to become a prostitute. She stated that she consorted with many men, but she had no sexual feeling for them. "Money was the fascination for me; you did not have to work hard." When she was asked to describe her ideal, she said, "A dark haired man; but really it was the money that appealed to me."

Case II.—R. was a woman twenty years of age. She was brought up in a small town in the State of New York. At the age of fourteen years she left school, Grade 7A. Soon after leaving school she began to work in a factory, earning from $8 to $10 a week. At sixteen she came to New York to look for a position. At the age of sixteen and one half years she had her first sexual experience; she was pregnant and abortion was performed by a physician. She stated that she met the man who seduced her one year prior thereto in her country town. Asked why she became a prostitute, she said, "I went to this life shortly after I had an abortion. I could not get a decent position to make a living. No one introduced me into this life. I learned it myself of easy living. There is no one to blame but myself." She declared that she had no love for prostitution, but "this is a business proposition." She had no sexual feeling for the men she consorted with. "I realize," she said, "that this is the only way to do it by not working hard. I am not fond of the life, but I like to live nice. I like to dress nice. I don't want to work hard. I like to go to swell places. I could not make $50 a day on anything else."

Case III.—B. was a woman twenty years old. She left school in the eighth grade and became a telephone operator, earning $8 a week. Two years ago she came to New York from Pittsburgh. Asked why she left home, she said, "Well, because I wanted to see what New York was like." Later she said that she had a married sister in New York, but when she came here she did not visit her sister for several weeks. In the train from Pittsburgh to New York she met a man and "he said this or that about nice clothes and I thought I would try it. I thought I might as well take a chance as all young girls do." She was then seduced by this man, with whom she lived in New York for several days. She received from him $25. She admitted that she did not like him and that she had no sexual feeling for him. Since then she has led the life of a courtesan.

Case IV.—P. was the sister of B. She was twenty-one years of age and had graduated from public school. Her ambition was to be a nurse. For ten years she kept house for her father. At sixteen she was seduced by a man. She was his mistress for three months. "After I had intercourse with him I did not care for him. I did it; yes, a lot of things we do that we do not like." Following this she began to lead the life of a prostitute. In discussing her immoral life she did not seem to show much effect and maintained that by following such an occupation she did not have to work very hard.

Case V.—W. was a girl nineteen years old. She left school at the grade of 6B. She described herself as always mischievous, playful, unstable. In school she was poor in conduct, good in studies, and frequently played truant. At fifteen she eloped with a young man and two days later she was apprehended by her mother. She was then arrested and sent to a correctional institution because of immorality. While there she came in contact with immoral women who told her "how to make money easy." When she was discharged from that institution she tried to obtain several positions, but was unsuccessful, and finally she decided to take up prostitution as an occupation.

In the present state of our knowledge, we are justified in regarding prostitution as a definite biological reaction. Indeed, it is a type of mental inferiority in which the affective and volitional phases of mental life are disordered. To be sure, the relation of prostitution to true feeblemindedness is much overrated; this may be explained by the fact that such investigations were not conducted along purely psychiatric lines. As a matter of fact, the percentage of the feebleminded prostitutes is too low for an adequate solution of this problem. There is no question that the true prostitute presents a definite type of personality, and furthermore, her sexuality is decidedly of an infantile type. This explains why perversions are so frequent among these women. Indeed, on the whole, she does not lead a normal coordinated sensual life, as she does not select her sexual object and the sexual act is performed for a nonsexual end. The undue aggressive tendency, so frequently manifest in the prostitute, is a homosexual trait. This characteristic especially appeals strongly to the neurotic male who is otherwise unattracted by normal women.

In general prostitution may be divided into three large classes: 1, symptomatic; 2, environmental; and 3, constitutional. The first is a symptom of a mental disease, neurosis or feeblemindedness, a class of cases which sooner or later becomes recognized and isolated. The second represents only a small group of cases who enter prostitution because of some economic or social reason. This is the most hopeful class for readjustment and reclamation. The third is the malignant type, inasmuch as the constitutional factors are in the foreground. However, there is a possibility that in the early plastic stage, under proper social adaptation and intensive reeducational methods, something might be accomplished in saving these women from entering the field of prostitution.

With this general consideration of the subject of prostitution, we may now ask what can be done to solve this problem? Granting that prostitution is a moral scourge, the source of venereal diseases, and the disturber of home life, yet it is an evil which will probably exist so long as monogamous marriages will be in practice. Aschaffenburg (25) thoughtfully remarks: "The harshest measures, flogging, the pillory, and capital punishment, proved of no avail in repressing the evil, which continued to spread and thrive only in a more secret and dangerous form, and they were always given up after a time. Thus in all countries, legislation has oscillated between extremes, turning from the method of herding prostitutes together in barracks to allowing them unlimited freedom, from occasional superintendence to the strict supervision of each individual. The tendency to respect the right of the individual and to place them above those of society on the one hand, and on the other the moral fear of sanctioning the evil by legally allowing it, have always led to the repeal of regulative measures. This has been followed by such a spread of prostitution in its most dangerous, clandestine form that it later became necessary to recognize and regulate it again."

It is obvious that the rational approach of this problem should embrace the following important points: 1. Proper sexual enlightenment should be given to young men and women in schools and colleges. The men especially should be fully acquainted with the nature and character of venereal diseases, and particularly of the effects of syphilis. Efforts should not be spared to emphasize the fact that the prostitute is directly or indirectly responsible for every case of syphilitic infection. 2. Every attempt should be made to recognize the abnormal personality of the prostitute in the formative period and adjust her to such an environment as would meet the needs of her mentality. 3. The necessity of creating hospitals for prostitutes with chronic venereal diseases is selfevident—indeed, their detention there should be determined by the duration of the virility of the venereal affection. 4. The question of actual segregation of prostitutes under strict police control and medical supervision should receive careful and thoughtful consideration, for after all, which is the greater evil: the segregation of this vice, or allowing it to disseminate and exert its pernicious influence upon society?

I am under great obligations to Mrs. M. E. Paddon, ex-executive secretary of the Magdalen Home, for the permission to examine the inmates of that home, and likewise my thanks are due to Miss E. C. Cook for the statistical data.

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24 East Forty-eighth Street.

Complement Fixation Tests in Tuberculosis.—Newell Bly Burns, Francis H. Slack, Philip Castleman, and Karl Bailey (*Journal A. M. A.*, May 12, 1917) tested the antigens suggested by Petroff and that of Miller and Zinsser and found the latter to give much the best results. From study of the reactions of a considerable group of patients to this latter antigen they conclude that the test seems specific for tuberculosis and that it is of considerable diagnostic value if repeatedly positive or negative in suspected cases in which there are no tubercle bacilli present in the sputum. A positive reaction in apparently arrested cases of tuberculosis is indicative of the persistence of an active focus.

THE VALUE OF SPUTUM CULTURES IN THE DIAGNOSIS OF PULMONARY TUBERCULOSIS.

By John A. Roddy, M. D.,
Philadelphia,
Associate in Hygiene and Bacteriology, Jefferson Medical College; Chief Assistant, Department of Clinical Medicine, Jefferson Hospital,
and David R. Brewer,
Philadelphia,
Assistant in Bacteriology, Jefferson Medical College.

The achievements of Griffith (1), Petroff (2), Williams (3), and others suggested the desirability of an investigation to determine the relative value of the different methods recently introduced for obtaining cultures of tubercle bacilli from sputum, and to elucidate further, if possible, the indications for such procedures in clinical diagnosis, together with the import of negative and positive findings. This paper is a preliminary report of such an investigation started last summer.

SPUTUM SHOWING TUBERCLE BACILLI.

To discover the proportion of tubes yielding cultures when planted with sputum known to contain tubercle bacilli, microscopical examination of sputum from patients presenting the typical manifestations of advanced pulmonary tuberculosis was made. Each day for a week specimens of sputum were taken and four smears from each examined. The patients selected, from whom sputum was obtained for the culture tests, were those whose sputum showed numerous tubercle bacilli in every slide examined. In this way a group of fifteen patients was selected. From each patient two to four specimens, taken at intervals of forty-eight hours, were planted on culture media less than three hours after expectoration. Every sample of sputum subjected to cultural test showed tubercle bacilli microscopically.

Griffith's method.—For Griffith's method twenty-eight specimens of sputum from eleven patients were treated as follows: One c. c. of sputum was mixed with an equal quantity of ten per cent. antiformin by repeatedly drawing into and expelling from a pipette and shaking. Two, four, ten, fifteen, twenty, and thirty minutes after mixing, a loopful was evenly smeared over the surface of each of two tubes of Dorsett's egg medium. These tubes were placed in an incubator at 37.5° C. and examined for tubercle bacilli after four, eight, and sixteen days' incubation.

Numerous tubes planted when the antiformin had acted on sputum for two minutes showed an abundant flora in the first forty-eight hours of incubation and had to be discarded, so that we have for consideration 244 cultures, thirty-four of which, or 13.9 per cent., showed tubercle bacilli.

Tubes planted two minutes after the sputum had been mixed with antiformin all contained organisms other than the tubercle bacillus and a smaller per centage of them yielded tubercle bacilli than those planted four, ten, and fifteen minutes after mixing sputum with antiformin. Results from tubes made twenty minutes or longer after mixing showed that such long exposures to antiformin frequently precludes further propagation of tubercle bacilli.

Petroff's method.—For Petroff's method 124 specimens from fifteen patients were treated as follows: Five c. c. of sputum were mixed with an equal quantity of three per cent. sodium hydroxide solution, digested at 37.5° C. for thirty minutes, neutralized, then centrifugated until sediment formed. The sediment was planted on two tubes of Petroff's medium and these tubes incubated at 37.5° C., being examined for tubercle bacilli after four, eight, and sixteen days of incubation.

Williams-Burdick modification of Petroff's method.—This modification consists of the substitution of a culture medium varying slightly from that employed by Petroff; in other respects the technic is the same. Cultural tests were made with this medium just the same as with Petroff's. With Petroff's method 32.7 per cent. of the tubes planted yielded cultures of tubercle bacilli; with Williams-Burdick modification fifty-five per cent. Of the tubes producing tubercle bacilli pure cultures were obtained in fifty-nine per cent. with Petroff's medium and in eight per cent. with Williams-Burdick modification.

Conclusions.—1. Petroff's method is superior to Griffith's method. 2. Petroff's medium is slightly superior to the Williams-Burdick medium and much better than Dorsett's medium for obtaining cultures of tubercle bacilli directly from sputum, especially if pure cultures are desired. 3. Although cultures of tubercle bacilli have been obtained by various workers from the sputum of ninety per cent. of patients, this high average cannot be obtained constantly, especially by methods simple enough to be applicable in diagnostic work. 4. An attempt to obtain cultures may fail when the sputum contains tubercle bacilli discernible with the microscope, therefore sputum culture cannot displace microscopical examination in the diagnosis of tuberculosis.

SPUTUM SHOWING NO TUBERCLE BACILLI.

The second part of the investigation was to determine the value of sputum cultures in the case of patients presenting doubtful, slight, or distinct physical signs and symptoms of pulmonary tuberculosis with little or no expectoration, repeated microscopic examinations during a period of two to six weeks revealing no tubercle bacilli.

Thirty-seven such patients were selected from whom forty-five samples of sputum were obtained. Two tubes were planted from each, following Williams-Burdick modification of Petroff's method. Of the ninety tubes planted, fifteen, or 16.7 per cent., produced tubercle bacilli. These cultures of tubercle bacilli were obtained from the sputum of fourteen patients, demonstrating the presence of tubercle bacilli in the sputum of thirty-seven per cent. of patients where microscopical examination failed to demonstrate them.

Conclusions.—1. Sputum culture will reveal the presence of tubercle bacilli in the sputum when microscopical examination fails; it will do so in cases presenting doubtful clinical signs and symptoms as well as in those presenting distinct signs and symptoms; although such results cannot be expected in every case, they are obtainable in a sufficient number to establish sputum culture as a valuable aid in

the diagnosis of doubtful cases. 2. The results of this investigation, harmonizing as they do with previously reported findings, clearly indicate the danger of dissemination of the disease by tuberculous patients whose sputum does not show tubercle bacilli upon microscopical examination.

SPUTUM CULTURE FOR OTHER FORMS OF BACTERIA.

The third part of this work was to detect the presence of higher forms of bacteria—hyphomycetes and blastomycetes—in the sputum of patients presenting clinical evidence of pulmonary disease. In all, sixty-eight patients were selected from whom sputum was obtained. One third of these patients had mild symptoms and slight physical signs and no tubercle bacilli in sputum demonstrable by either microscopical examination or culture, and were classified as doubtful or early cases of pulmonary tuberculosis. Of the remaining patients about half were classified as early cases with slight involvement and the rest advanced cases; all had tubercle bacilli in the sputum, demonstrable by culture only in some cases. The methods of staining sputum to disclose tubercle bacilli do not favor the detection of the higher forms of bacteria. Gram's method, being generally considered best for this purpose, was employed. Sabouraud's medium, believed to be the most favorable for the cultivation of these organisms, was used for one sixth of the culture tests; the rest were made with Petroff's medium, which we believe from preliminary tests will sustain the growth of hyphomycetes and blastomycetes. Four hundred and eighty films from 240 specimens of sputum were examined microscopically. One hundred and thirty-six culture tubes were planted. Only four slides and ten cultures showed higher forms of bacteria and subsequent examinations of sputum from the same patients showed these were not etiological factors.

These findings seem to indicate that pulmonary blastomycosis and pulmonary infections with other forms of higher bacteria simulating tuberculosis are not common, and that very few, if any, of the cases diagnosed as pulmonary tuberculosis are cases of blastomycosis—at least, in this vicinity at this time. The reports of Stober (4), Myers (5), Clark (6), Boughton (7), Jackson (8), Bechtel and LeCount (9), Ashford (10), Castellani (11), and others indicate, we believe, that this region is relatively free of such pulmonary infections, or else that their occurrence is epidemic rather than endemic.

We wish to express our thanks for the kind interest taken in this work by Dr. R. C. Rosenberger and Dr. E. J. G. Beardsley, and our appreciation of the courteous assistance given by the resident physicians and the nurses of the Philadelphia General Hospital.

CULTURE MEDIA USED.

Dorsett's egg medium.—Wash eggs thoroughly with fifteen per cent. solution of carbolic acid. Carefully break the eggs into a wide mouthed flask and shake up the flask until the whites and yolks are thoroughly mixed. Add twenty-five c. c. of distilled water to every four eggs; strain through sterile cloth. Pour ten c. c. each into sterile test tubes and slant in an inspissator and expose to 73° C. for four or five hours on two days. On the third day raise the temperature to 76° C.

Petroff's medium.—Five hundred grams of beef or veal are infused in fifteen per cent. solution of glycerin in water and stored in a cool place. After twenty-four hours the meat is squeezed in a sterile press and the infusion collected in a sterile beaker. The shells of the eggs are sterilized by ten minute immersion in seventy per cent. alcohol. They are broken into a sterile beaker, well mixed, and filtered through sterile gauze. One part of meat juice is added to two parts of egg by volume. A one per cent. alcoholic solution of gentian violet is added to make a dilution of one in 10,000. The three ingredients are well mixed. The medium is tubed and inspissated as for Dorsett's egg medium.

Williams-Burdick medium.—1. Egg white solution. This is made by diluting the egg white with ten parts of distilled water and thoroughly shaking. The fluid is opalescent and contains numerous whitish flakes. To clear it, it is pressed through a thin layer of cotton and then heated to 100° C. to hasten precipitation. It is then filtered through paper. 2. Egg yolk solution. The yolks are diluted with ten parts of water and well stirred. The very cloudy emulsion is clarified by adding normal sodium hydroxide. Too much hydroxide is harmful and therefore complete solution of the yolks is not desirable. The emulsion should be slightly turbid. To attain the proper degree of turbidity, one c. c. of normal NaOH is usually added to each 100 c. c. of emulsion. This is not a constant amount, however, because some yolks will be completely dissolved by less than half this amount of alkali. The solution is heated to 100° C. and filtered. 3. Meat infusion. Five hundred grams of finely chopped lean veal is covered with one litre of water containing fifteen per cent. glycerin and infused for twenty-four hours, then filtered; five grams of sodium chloride is added and the infusion heated to boiling. It is filtered again and rendered plus one per cent. alkaline.

Place 300 c. c. of the ten per cent. egg white solution in a litre flask, 300 c. c. of the ten per cent. egg yolk solution in another flask, and 400 c. c. of the meat infusion, to which is added fifteen grams of powdered agar, in a third flask. These are then sterilized in the autoclave at fifteen pounds pressure for fifteen minutes. They are removed, and while still hot one c. c. of a one per cent. alcoholic solution of gentian violet is added to the broth agar. The contents of this flask are now poured into that containing the egg white and then the egg yoke is added. The whole is poured back and forth in order to thoroughly mix. It is then tubed and slanted.

Sabouraud's medium.—Maltose, four grams; peptone, one gram; agar, one and a half gram; and water, 100 c. c.

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1604 Pine Street.

HUMAN ANTHRAX.

Report of a Typical Case.

By Joseph B. Bissell, M.D.,
New York,
Director and Visiting Surgeon, Bellevue Hospital; Consulting Surgeon, Hospital for Deformities and Joint Diseases; Visiting Surgeon St. Vincent's Hospital; Surgical Director, Radium Sanatorium.

When a group of histories of anthrax cases is reviewed one is startled to find so commonly the record: "Slight abrasion on the skin; engaged in handling hides; noted one or a group of pimples over the lesion, which rapidly degenerated into a pustule with a characteristc black centre." Such is the history that directs attention to anthrax as an important chapter in preventive medicine. It is with this phase of the situation in mind that I report the following interesting case of anthrax recently presenting in my service at Bellevue Hospital.

Case.—W. M., fifty-four years of age, a longshoreman, was perfectly well up to May 23, 1917, when, in the course of his daily work of unloading cargo from a South American freighter, he scratched the left side of his neck in throwing a bundle of hides over his shoulder. The following day he noticed a small red pimple at this point which itched slightly. A pustule soon developed, which was dark in the centre, with much swelling surrounding. This condition progressed rapidly, extending down the right side of the chest so that in a few hours his neck and left thorax were extremely swollen. The cervical and axillary glands of right side were enlarged but not tender; the similar glands on the left side were slightly involved. On May 25th, when admitted to Bellevue, the following surgical condition was recorded: Right side of neck and chest were the seat of a red indurated swelling extending from mastoid down to nipple, involving both sides of chest but not spreading to face. At the upper border of the swelling on the right side of the neck, one inch below the mastoid process, there was an indurated red papule with a brown leathery centre; surrounding this a circle of vesicles more or less concrete. The whole lesion was about the size of a ten cent piece and elevated about 0.25 centimetre above the surrounding skin.

His temperature on the day of admission was 99.4° F.; pulse, 84; respiration, 22. One hour after admission fifty c.c. of anthrax serum was given intravenously. Pulse went to 100° F., temperature and respiration remained the same; no chill or other untoward symptom. Twelve hours after admission a second intravenous injection of fifty c.c. of anthrax serum was given the patient, with no reaction whatever. A blood culture taken at this time was positive, few colonies of anthrax being found; direct smear from pustule showed no bacteria. At 5 p. m., May 28th, eighteen hours after admission, operation was performed which consisted in the removal of an area three quarters of an inch by three quarters of an inch around and including the pustule, going down to muscle fibres and beneath them. The edematous tissues of the neck and chest were laid wide open with longitudinal and transverse incisions and wide dissection under the flap. Blood culture taken again at this time showed positive anthrax colonies, and pathological report on excised pustule showed ordinary anthrax histology with anthrax bacilli in tissues.

Following operation, the patient's temperature rose to 103.2° F.; pulse, 110; respiration, 24. Two hours after the patient had brisk hemorrhage from wound, which necessitated changing the dressing and packing the wounds tightly with gauze. The wound at operation was saturated with fifty c.c. serum. Six hours after, third and last injection of serum was given. This was followed by a chill. On the morning following operation the patient was in a very poor condition. Pulse was very weak; he vomited; temperature dropped to subnormal; respiration was poor and superficial. Infusion of normal saline was given. Whiskey and saline were ordered per rectum, which were expelled. Patient was then put on a diet of buttermilk and beer alternately every two hours for four days, without other food or serum of any kind. Blood culture on the evening of May 28th was absolutely negative, with temperature varying between 99° and 101° F., and his convalescence from then on was uneventful. The patient was discharged on June 8th with wound entirely healed and apparently well.

My appreciation is acknowledged to Dr. S. M. Milliken, my assistant, for his services in this case. Special note should be made of the fact that in the stimulating treatment adopted for the care of this patient, whiskey was not well borne and was discontinued. In its place liberal quantities of beer were given with satisfactory results. The food value of beer here served its purpose as well as the stimulant effects sought. I have observed marked beneficial results following the administration of beer in so many instances that I feel we are warranted in placing a higher value on it as a nutrient therapeutic agent.

The fact that the United States is importing animal products such as, hides, wool, hair, bristles, bone, etc., in large quanties from South America and Asiatic countries justifies careful watching of anthrax cases that develop among our native laborers engaged in handling such commodities. When considering the question of modes of infection an interesting fact has been brought to my attention. The many cases of anthrax reported in New England among people engaged in handling leather while making shoes show initial lesion on the hands. The mortality is relatively low, about forty per cent. In New York and especially at Bellevue Hospital, the cases received almost always show the primary infection in the neck or submaxillary region. This condition is due to the fact that during the process of unloading hides, the skins are thrown over the shoulder and frequently their rough surface causes an abrasion which opens the way to infection. The mortality in these neck and shoulder cases has been well over ninety per cent.

While every effort is made by the authorities to guard against anthrax infected products, the disease is occurring at our ports of entry with unpleasant frequency. This condition would indicate that more rigid inspection should be enforced and greater precautions taken to safeguard those who must handle these suspected materials in the various stages of manufacture. Proper care of the hands, respiratory organs, as well as bench and loft sanitation would materially improve the situation. Such measures of precaution are strongly to be urged because it has been found that ordinary fumigation and germicidal treatments have but little action on the specific spore of anthrax. Antianthrax serums seem to have definite value and their use is to be urged.

46 West Fifty-fifth Street.

THE CLINICAL SIGNIFICANCE OF A FECAL ANALYSIS.

First Communication.

By Louis Winfield Kohn, M. D.,
Philadelphia,

Chief of the Gastrointestinal Clinic at the Samaritan Hospital of the Temple University, Philadelphia; Gastroenterologist to the Northwestern General Hospital, Philadelphia, and Physician in the Jefferson Hospital Gastrointestinal Clinic, Philadelphia.

To look at these things in a deeper sense rather than merely to glance at them necessitates an effort to grasp detail. To cultivate such an ability or to arouse such a latent instinct helps the progress of science.

An investigation significant of scientific progress is that of a fecal analysis which, although not adhered to in its actual performance to the extent that it should be, is nevertheless deserving of special attention because of the valuable information it conveys. The chief reason for the neglect of this procedure is probably the unpleasant nature of the work connected with an examination of this character, as otherwise there could be no objection. More weighty reasons must be advanced before we medical men dare hold aloof from any work that might eventually bring fruition, despite the unpleasantness associated with it. No powerful argument can be adduced that would tend to limit the practice of this method. The results acquired warrant the efforts entailed in its application.

Why should we so strongly encourage an examination of this character? Logical reasoning will convince us of its importance. A fecal analysis should be performed for the same reason that a blood analysis or a gastric analysis is performed. By such investigations we are made acquainted with certain objective phenomena which we at once realize are at variance with, i. e., differ in abnormal states from, those found under normal circumstances. A close study of these findings will convey to us probable reasons or causes for their occurrence. A normally acting gastrointestinal tract will cause the expulsion of a normal appearing residue, as is very evident, and likewise a perverted state of gastrointestinal activity will contribute to the expulsion of a perverted residue. The differences to be noted in the respective stools would, therefore, correspondingly imply differences in their production. In such a manner do logical deduction and sound judgment lead us to valuable information.

Of late, however, we have resorted to other means than fecal analyses for the advancement of our knowledge appertaining to the condition of the gastrointestinal tract, viz., examinations of gastric and duodenal fluids, fluoroscopy, and radiography, but notwithstanding the great value attached to these methods, the importance of a fecal examination has not dwindled in the least.

A knowledge of excretory products should entail a thorough understanding of the superficial and inner characteristics of such material, macroscopical investigation accomplishing the former and microscopical, bacteriological, and chemical examinations applying to the latter. Through this means we are bound to acquire such information as will enable us to attain a true idea of the original cause of the presence of the varied stool characteristics, thus illuminating and bringing to mind the probable or possible conditions existing in those occult organs obscured because of their location in the abdominal cavity. A fecal analysis will, therefore, very often acquaint us with the character of the cause of the disease in the digestive organs.

Test diet.—Just as in our gastric studies, so also in our intestinal studies, we must resort to test diets which, having been acted upon by the digestive functions, result in an accumulation of waste material, the nature of which from a comparative viewpoint is of greatest scientific value, Adolf Schmidt, Nothnagel, Strasburger, and others have through their noble efforts and untiring energy improved this work to the extent that it now belongs to the class of indispensables. The normal stool consists of the excrementitious material resulting from the test diet administered to a so called normal person and has been found to comprise such waste products in normal proportion as the various digestive juices are unable to further dissolve or which the system normally exhibits no predilection for absorbing. An analytical knowledge of a normal stool is, therefore, essential in order that we may distinguish abnormal stools.

The Schmidt-Strasburger test diet was probably the best original diet recommended to patients for whom a fecal analysis was indicated. This diet, it seems, is well tolerated by the patient because of its nonfatiguable and nonirritating influences due to the small, yet sufficient quantity of waste material it possesses for its stimulatory effect upon bowel activity, and because it contains in proper proportion and of sufficient caloric power an admixture of the three chief food stuffs to which we are all accustomed, in fact dependent upon, for subsistence, viz., carbohydrates, proteins, and fats. Slight variations from the original Schmidt-Strasburger test diet do not appreciably alter the result aimed at and we may, therefore, employ a test diet that more closely approximates the thrice daily American style of feeding. The following modification is recommended:

Breakfast—Milk, tea, or cocoa (two cups), one soft boiled egg, two slices of bread and butter, and cereal—a small plate of strained oatmeal.

Dinner—A quarter of a pound of rare beef or chop well cut up, a large helping of mashed potatoes, and bread and butter.

Supper—One plate of soup, two soft boiled eggs, bread and butter. Cereal if desired.

This diet should as a rule be administered for one or two days in succession and sometimes longer, so as to obtain, if possible, a stool originating entirely therefrom. The second or third stool following the ingestion of the test diet will as a rule constitute the material desired for test purposes, particularly in those instances where a laxative has been given at least ten hours before the test diet was taken. In those cases, where a laxative is contraindicated because of untoward symptoms as in intestinal catarrh or diarrhea of functional or organic nature or for other reasons, we may, if not certain that the proper

specimen of stool is obtained in the earlier evacuations, either extend the duration of the test dietary for a day or more, so as to give more time wherein additional specimens may be passed, or we can administer at the beginning with our test diet certain coloring agents, harmless in action, which will serve as a marker in differentiating the preceding food waste from that of the test diet waste. The excrementitious material exhibiting the characteristic coloration or that which follows it during the time that the test period is in force, is carefully studied. Carmine powder of five to seven grain dose in wafer or capsule form, or charcoal of one half to one dram dose may be employed and will respectively color the excreta red and black. During the test diet period, two or more examinations may be made for the purpose of further illuminating our minds or for corroboration.

The form or physical characteristics of the remains of the original digestible and indigestible substances ingested in the test diet and which constitute a great portion of the fecal excrement will convey a true idea of the effect wrought upon the foods by the alimentary tract. Already being acquainted to a certain extent with the action of the alimentary secretions upon the different kinds of food, as well as with the resulting remains to be expected in the normal excrement following a test diet, we are better prepared to deduce with exactness the efficiency of the various alimentary secretions. In our consideration of the gastrointestinal tract it is to be borne in mind that the secretions *per se* may be neither the disturbed factor nor the disturbing factor and we must, therefore, perforce pay due respect to probable variations in motility, peristalsis, and absorption, which, of course, may be either primary or secondary in origin, and either functional or organic in nature.

Possible constituents of a stool.—Before discussing the characteristics of the stool, it might be well to ponder a little over the following enumeration of the many possibilities that may occur in a specimen of stool and which may also enable us to take a more comprehensive view of the subject: 1. Food remains as muscle fibres either partially digested or undigested, fat as droplets (neutral), starch cells either partially digested or undigested, cellulotic covers of the starch cells as potato framework, vegetable framework and fibres, oatmeal and cocoa remains, food seeds, connective tissue, tendon, and cartilaginous remains. 2. Substances, the result of either fermentive or putrefactive changes and saponification, as volatile fatty acids, lactic acid, succinic acid, alcohol, carbon dioxide, hydrogen, and methane, which correspond to carbohydrate fermentation; indol, scatol, phenol, ammonia, and hydrogen sulphide as a result of albuminous fermentation. 3. Products direct from the organism in the form of secretory or cellular products as the intestinal, pancreatic, and biliary secretions, mucus, lining epithelium from any portion of the digestive tract, and at times possible secretory and cellular elements from above, i. e., from the oral, nasal, and other portions of the respiratory tract. 4. Pathological organic constituents as blood, pus, excess mucus, definite normal tissue fragments, and tumor fragments. 5. Crystals of various types as calcium oxalate, calcium carbonate, neutral calcium phosphate, ammonium magnesium phosphate, fatty acids, triple phosphates, soaps, cholesterin, hematoidin, and Charcot-Leyden crystals. 6. Bacteria, either saprophytic or pathogenic in nature, which may be present in normal as well as in abnormal conditions, viz., colon and typhoid bacilli, tubercle bacilli, Bacillus dysenteriæ, Bacillus lactis aerogenes, Bacillus aerogenes capsulatis, Bacillus bifidus, Bacillus putrificus, Spirillum cholera, Finkler-Prior bacillus, various cocci, and many others that have been introduced with the food. 7. Foreign bodies as hair, parasites of various types, parasitic ova, parasitic segments, concretions as gallstones, pancreatic calculi, enteroliths, coproliths, sand, and possibly other foreign material that had been taken with the food, as bones, fruit sand, and shell.

Normal stool.—Now that we have an idea of the possibilities that may occur in the stool, it might be proper to enumerate the probable constituents of a normal stool following a test diet, thus enabling us to clearly distinguish an abnormal from a normal excrement. The following elements may be noted in such a normal specimen: Muscle fibre remains in very small quantity and is only noted microscopically as more or less digested nonstriated fibres with rounded ends and of exceptional rarity, seldom striated; isolated potato remains, either empty or crowded with the undigested remains of its original content; a comparatively small amount of yellow calcium salts and colorless soaps; occasionally but rarely a few fatty acid crystals or flakes; little dark flakes of chaffy oatmeal remains; cocoa remains when cocoa is taken with the test diet and detritus consisting of small glandular, globular, and bacterial remains from the food and body organisms. The findings just cited are seen upon microscopical examination since macroscopical investigation, as a rule, only reveals oatmeal and cocoa remains in the normal stool following a test diet. The recognition of undigested or partially digested food elements and abnormal secretions or other substances in macroscopic or microscopic quantity will have some probable pathological significance. Occasionally the normal stool will show some vegetable or fruit remains of food eaten before the test diet was taken. To acquaint one's self with the quality of bacteria present in the stool would necessitate more than an ordinary macroscopical or microscopical examination. Such knowledge could only result from a bacteriological study of different cultures prepared from the stool.

Quantity of residue.—The quantity of fecal material excreted by an individual may vary markedly, depending upon the quantity and quality of food taken, as well as upon the functional activity of the gastrointestinal tract. Where a large quantity of food is eaten, a corresponding increase in the quantity of fecal residue is bound to follow unless in particular instances, where there may be a possibility of voracious intestinal absorption. The quantity of residue following a vegetable diet is bound to exceed that resulting from an albuminous diet and the like because of the greater quantity of indigestible or waste material naturally constituting

such a diet. Where a hyperactivity of the entire gastrointestinal tract or even a portion thereof exists, a variation in the quantity of residue may directly be attributed to it. For instance, in cases of hypermotility or hyperperistalsis, where insufficient digestion or insufficient absorption has taken place, the food will probably hasten through the digestive tube, thus showing itself in the stool in greater quantity than is ordinarily expected after such a diet. Very often with this condition there is associated a coexistent hyperactivity of the glandular structures which contributes to the production of a watery stool along with an increase in its solid constituent makeup. On the other hand, where certain portions of the gastrointestinal tract are inactive or lacking in muscular propulsive power, as in intestinal stasis due to atony in any portion of the tract or in such instances where an impediment or obstruction opposes as in obstipation due to any one of many kinds of mechanical interferences, or in such cases where an excessive degree of contraction occurs as in spasm of any portion of the tract, the total quantity of residue may be decreased, due to resorption of a large amount of the retained material, but the evacuation may not occur daily, and when it does occur may do so in apparently large amount. We must in each instance look into the relative importance that the quantity of excrement has in our studies. The average amount of residue from a normal adult is 100 grams in weight every twenty-four hours. The number of stools a day will depend upon the functional and organic status of the gastrointestinal tract and its allied organs.

As a rule, the number of stools voided daily by a normal person is about one or two, although with some even more may result. In those conditions associated with diarrhea, a great many movements may occur during a day. On the other hand, in so called constipative states the bowels may not move for days or only after mechanical cleansing of the lower bowel is practised. Normally, the gastrointestinal tract should rid itself of its contents per rectum in twenty-four to thirty-six hours. This is, however, no fast rule, since there are many apparently normal individuals in whom the food residue leaves the organism in forty-eight hours after ingestion. In some people, the desire for evacuation comes on regularly and uniformly at definite periods, but in others, more often, no such rhythm is noted.

Consistence.—Normally the stool is a cylindrical mass of doughy or soft consistency. At times it varies in form, although its consistence may be normal. When the stool is of unusually small calibre, some organic involvement of the lowermost bowel or rectum may be suspected, as annular stricture of the rectum or anus and prolapsus ani. When ribbon shaped or flattened stools are seen, a condition of partial obstruction is immediately inferred, as occurs in cases of organic rectal involvement, viz., lateral rectal stricture, cancer on the rectal wall only partially obliterating the lumen, some inflammatory lesion situated on the wall with which local congestion or swelling is associated, thus lessening the calibre of the tube, in those cases where some inflammatory lesion from without or mass from without presses or encroaches upon the lumen of the rectum as in ischiorectal abscess, acute or chronic disease of the prostate, uterine prolapse, tumor of either uterus or bladder, etc. A functional spastic involvement of the lower bowel will also favor the production of either pencil or flattened stools. In other instances, where the consistence of the stool is more firm than usual, the shape or form will also exhibit variations in contour. Where the feces have been retained in the lower bowel for more lengthy periods than normal, the material often loses its watery elements because of resorption and assumes a more firm and brittle quality, thus tending to break very easily into small hard masses, or scybalæ, either quadrilateral, fusiform, or rounded in shape. This type of stool is often found representing the excreta from cases of obstinate constipation due to atony or dilatation of some portion or all of the large intestine.

In spastic constipation, the stool though firm is usually of small calibre and pencil or finger form. The consistency may also vary from that of extreme solidity or hardness to that of extreme fluidity. In ordinary diarrheas and enteritis, a semisolid, semifluid, or fluid excrement may obtain. In rare instances, when serous stools occur, cholera, and various poisonings may be suspected. When mucus preponderates and presents itself in thick masses, sometimes in the form of a bowel cast, a mucous colitis is strongly suspected. When a condition of increased or rapid peristalsis or increased motility exists, the stools will usually be unformed and fluid in nature.

Color.—Normally the color is a dark brown due to hydrobilirubin or urobilin (altered bile), especially after a diet such as the test diet. In cases, however, where milk or starchy foods predominated in the diet, a lighter brown may be expected. Fruits such as grapes, plums, berries, and the like, as well as wines, may produce very dark colored stools. These ingredients are, however, not a part of the test diet and may be ignored if the test diet has been subsisted upon for a sufficient length of time. When bilirubin, or unaltered bile, occurs in the stool, we must suspect some pathological state, since normally unchanged bile is known to exist not beyond the ileocecal valve, or, in other words, is practically confined to the small intestine. The color of such a stool is usually green or greenish yellow, and may suggest a hyperperistalsis of the small intestine in which the biliary content of the small intestine is forced into the large bowel before the process of reduction associated with putrefaction has had time to alter it.

When a decided deficiency in the bile content or total absence occurs, a clay colored or very light stool will appear. This tendency toward a light coloration of the stool follows because of diminution in original bile pigments and because of an increase in undigested or neutral fats. This deficiency in bile may be due to an obstruction to the outflow of bile from the common bile duct resulting from either calculi, inflammation of the bile ducts, inflammation of the duodenum, including the papilla of Vater, tumors of either pancreas, duodenum, or the bile

ducts, and in cases of pressure upon the common duct from without. We may also have a deficiency of bile resulting from actual decrease in its production, as in anemias, poisonings, rickets, cancer of the liver, cirrhosis of the liver, or amyloid disease of the liver, etc. At times an excess of fat alone, as in the free drinking of cream or milk, may produce a light colored claylike stool. As a rule, however, when fat shows in the stool there is most often an associated defection in bile content in the intestine. Where steatorrhea is met with despite the presence of associated bile in the excrement, we must be ever mindful of pancreatic insufficiency, and localized disease of the intestine, as in tuberculosis or amyloid degeneration.

Visible blood when apparent in the stool is usually due to hemorrhage from some portion of the lower bowel, as in hemorrhoids, ulcer of the rectum or sigmoid, polyps or cancer of the lower bowel, and from any condition in which a break in continuity of the bowel lining has occurred. Rarely, excessive bleeding from above, as in gastric or duodenal ulcer or new growth, may contribute to the exhibition of visible blood in the stool; especially is this the case when a coexistent bowel hypermotility displays itself. As a rule, when the bleeding occurs high up in the gastrointestinal tract, the stool will exhibit a brownish red, chocolate, black, or tarry coloration as in melena. Occasionally in bleeding from as low down as the colon, as occurs in dysentery, the blood may not demonstrate itself visibly, but only in occult form.

Odor.—The odor of the stool may usually be attributed to scatol, one of the products of fecal putrefaction, and in a less degree to indol. In those instances where carbohydrate fermentation manifestly asserts itself, a sour odor will follow from the resulting products of fermentation such as the volatile fatty acids, lactic acid, acetic acid, succinic acid, etc. Where albuminous putrefaction has taken place, in predominating fashion, instead of the ordinary mild scatolic or indolic odor, there may result a peculiarly offensive odor due to the presence in increased quantity of albuminous fermentative products as scatol, indol, phenol, ammonia, and hydrogen sulphide. A pronounced sour odor may suggest a defective starch or fat digestion, whereas a pronounced offensive odor would suggest defective digestion probably associated with some pathological anatomical changes in some portion of the digestive tract. Excepting profound constipation, albuminous putrefaction will establish itself in diseases of the liver, gastroenteritis, pancreatic disease, and either syphilitic or cancerous involvement of the gastrointestinal tract, particularly low down. In these cases the increased putrefaction is due mainly to the degenerative changes in either the exfoliated normal tissue or in the exfoliated or loosely attached diseased tissue, or perhaps in the excess of physiological secretions. On the other hand where an extreme grade of hypermotility involving the entire gastrointestinal tract exists, or where the food residue does not reside in the large bowel for a time sufficiently long enough for fermentive changes to have taken place, the excreta when passed do not possess any characteristic fecal odor, but rather a chymic fragrance or no odor at all. In cholera, for instance, where the ingesta rush through the entire gastrointestinal tract, the stool resembles rice water in appearance and has little if any odor. In amebic dysentery, the odor of the stool may resemble that of glue. When fatty stools have been passed, a butyric acid or rancid butter odor due to fat fermentation may be noted.

Reaction.—The reaction of the stool normally is neutral or faintly alkaline. In those specimens where carbohydrate fermentation has occurred, an acid reaction will probably be demonstrable. When albuminous putrefaction has taken place, an alkaline reaction may be expected. The reaction has no other value than to inform us regarding the character of the predominating fermentation. The degree, however, to which fermentation has progressed will be elicited by other methods such as the Schmidt fermentation test.

Constituent inspection.—Upon detailed macroscopical inspection, especially after the stool has been properly prepared for examination, many additional points of value may be brought to light, which will decidedly enhance our knowledge of the subject. It might be proper here to make known the method of preparation. A walnut sized piece of excrement is ground up in a small glass or porcelain mortar to as fine consistency as possible, while a few c. c. of distilled water are gradually added until a mixture of uniform saucelike consistency is obtained. This is then spread in a thin layer upon a flat plate with a dark background, and the constituent portions of macroscopic size are examined.

The normal stool following a test diet and after the preparation just described will usually present a homogeneous specimen seldom showing more than pin head sized debris, but occasionally red brown pointlike remains which are either chaffy remains of the oatmeal gruel or the remains of cocoa nibs, if cocoa is eaten in the test diet. Vegetable or fruit remains as small fruit sand or seeds resulting from fruit eaten prior to the institution of the test diet may often be observed in a normal stool. As a rule, no other macroscopic ingredients will be noted in a normal specimen.

In pathological specimens, on the other hand, many other ingredients may be noted. For instance, numerous connective tissue and tendon remains from the chopped meat of the test diet which appear in the stool as whitish yellow threadlike substances of solid consistence, will speak for probable gastric disturbance as achylia gastrica, cancer extensive enough to have despoiled proper HCl and peptic secretion, or functional derangement involving secretion or motility either separately or jointly. Of course, our gastric studies would probably help check up these stool findings. As a rule, defective connective tissue digestion points to a disturbance in both peptic and acid secretion, yet it is possible that a marked deficiency in either one may alone produce similar indigestion. We dare never forget that the underlying cause back of these various disturbances may be an ill acting nervous system rather than some purely local anatomical change. At times it may be difficult to distinguish these connective tissue remains from shreds of mucus and in order to

assure ourselves, we can employ the acetic acid test through which it will be found that acetic acid when applied to connective tissue dissolves or causes it to disappear whereas if applied to mucus, coagulates or causes it to appear more distinctly. Only rarely do we find occasional isolated tendon fibres in the normal stool.

Muscle remains look like small brown colored rods which resemble splinters of wood that may have been crushed by pressure. These remains when macroscopically visible point to a disturbance in intestinal digestion, most probably a defect in tryptic activity either owing to a diminution or failure in the secretion of trypsin, or owing to a lack in the secretion of bile as a result of which the trypsin is in a more or less inactivated state. Often these remains may occur in conjunction with connective tissue remains which would probably denote associated gastric disturbance. Muscle remains in the stool indicate intestinal indigestion resulting from one or more of many possibilities, such as acute or chronic pancreatitis, functional failure in the pancreatic secretion, failure of the entrance of secretion into the duodenum as a result of stone in the pancreatic duct, stricture of the duct following inflammation therein or from without as a result of adhesions or tumor encroachments, tumor of the entire pancreas either benign or malignant, cholecystitis or cholelithiasis, other diseases of the gallbladder or duct, adhesions resulting from disease in other organs and which oppose the expulsion of bile into the duodenum or in those diseases of the liver which cause a depression in the secretion of bile.

Potato remains in the stool appear like glassy, transparent granules and may easily be mistaken for flakes of mucus. They are usually round or globular in shape and in a flat spread out layer of the prepared specimen, seem to project above the level of the sample and are thus distinguished from mucus flakes which lie flat or even with the remainder of the specimen. They may sometimes be seen in small quantity in those normal cases where a large vegetable diet was eaten and where a bulky so called vegetable excrement results. As a rule, however, these potato remains after a test diet would suggest a disturbance in amylolytic intestinal digestion, either a failure or diminution in the secretion of amylase of the pancreatic juice or in the inverting ferments of the intestinal secretion or both. The underlying condition may be either functional or organic in nature. Causes similar to those previously mentioned in connection with tryptic indigestion may here also manifest themselves. Acute or chronic duodenitis or any organic disease of the duodenum may produce a defect in amylolytic digestion. Very often amylolytic and tryptic indigestion go hand in hand and coexistent therewith, fat indigestion may also occur.

Fat remains may often show in the stool in variable quantity and when in large quantity, the stool assumes a light or claylike color and is of putty like consistency. The less fat there is in the stool, the darker is its color apt to be and vice versa. In rare instances, only small clumps of fat will be noted rather than a homogeneously admixed deposit of fat. Of course, the presence of fat in the stool may be attributed to a lack or deficiency of lipase or fat ferment in the pancreatic secretion or to a lack of proper lipolytic action. Most often where a faulty digestion of fat exists, the stool will present a deficiency in bile content hence the lighter color of the stool. The absence of the bile also probably retards the lipolytic action of the pancreatic juice. The same possible morbid conditions that contribute to the production of tryptic or amylolytic indigestion may here similarly assert themselves.

Thin mucilaginous mucus in scant amount intimately admixed with the remaining excrement is always present in a normal stool, but is hardly visible to the naked eye. When in larger quantity, it has pathological significance. It may be seen in the form of large or small flakes. When these flakes show in fair degree, some catarrhal intestinal disturbance may be suspected. The smaller the flakes of mucus, the greater the probability of catarrhal disturbance in the upper portions of the large bowel as the cecum, ascending colon, and transverse colon but should the stool at the same time be liquid in character then it may be possible that a hypermotility of the small and large bowel existed and these flakes may have had their origin in some portion of the inflamed small intestine. The larger the mucus flakes, the more easily they are recognized and the greater the probability of their origin in the lower portion of the large intestine. The microscopical examination of these various flakes may more definitely inform us regarding their origin. When mucus appears in larger strips or shreds, casts or tubular form, we may at once suspect either a membranous enteritis or mucous colitis. When the mucus loses its original glassy or transparent character and assumes a translucent, whitish, or even brownish coloration or a change in its consistency from that of mucilaginous softness to that of gumminess or even greater hardness, then some other factors must be thought of before considering the cause a functional or neurotic colitis. Such characteristics may point to definite organic involvement. When a purulent mucus exhibits itself, we are forced to suspect some ulcerative process involving either sigmoid or rectum.

Flakes of pus or pure pus would imply some definite organic infective process in the form of either small erosions, large ulcerations, or abscess. When appearing as pus flakes, the large bowel higher up must be affected whereas if in larger quantity, the pus must originate from low down as in ulcer of the sigmoid or rectum, either benign or malignant; rupture of an abscess in the bowel, or from some neighboring organ into the bowel, as a psoas abscess, fistula in ano, etc.

Blood when found, of course, means hemorrhage. The quantity of blood will signify the degree of hemorrhage. The larger the quantity of visible blood, the greater the probability of the bleeding in the lower rectum as in hemorrhoids, ulcer, fissure, fistula and ulcerous cancer. Of course, it is possible to note blood in the stools of patients with a bleeding point high up when there has been a very active movement of the entire in-

testinal tract. Occult blood will be found through chemical means.

Occasionally large crystals of ammonium magnesium phosphate may be found in putrefying malodorous stools and are recognized by their well known coffin lid shape and chemical reaction, being soluble in acids, as well as the grating sound when the feces are ground up.

We may also at times find foreign substances as fruit sand, stones, tape worm proglottides, and other parasites which all have their special signification.

Thus is concluded a hurried survey of the macroscopical characteristics and significance of the stool constituents. In a later paper the microscopical, chemical, and other stool characteristics will be considered.

1332 Spruce Street.

THE INTRAVENOUS USE OF CALCIUM SOLUTIONS AS AN AID IN THE TREATMENT OF TUBERCULOSIS.

With a Report of One Hundred and Twenty Cases.

By Thomas J. Beasley, M.D.,
Indianapolis.

Attention is invited to three previous articles upon this subject by the author (1). The subject of calcium deficiency and its relation to tuberculosis has been commented upon by many observers, and the deposit of calcium in healed or healing tuberculosis areas in the lungs stands without parallel in pathology. In no other disease manifestation do we find that the organism utilizes calcium so uniformly in walling off disease areas as in tuberculosis of the lungs. All are familiar with the frequency and abundance of calcium deposits in healed tuberculous lesions of the lungs, this being in contrast with the scantiness of these deposits in the lungs of those who succumb to the disease. These facts have been impressed upon us by observation in the autopsy room and in the x ray laboratory. Believing that these facts will be conceded by all, then is it not fitting that we should devote our effort to the study of this peculiar phenomenon in the healing of tuberculous areas of the lungs? As the organism does seem to use calcium in an elective and selective manner in bringing about the cure of this disease and moreover if there is a deficiency of this salt in the blood of the tuberculous, may not the treatment be improved if in some efficient and direct manner we supply the blood with this salt?

The infrequency of tuberculosis among lime workers has been the subject of much comment by many observers, and for many decades various preparations of lime have been used and recommended in the treatment of this disease. However, most of the effort to supply tuberculous subjects with calcium has been by oral administration. While this method may be of some value, the alkalinity of this salt soon impairs gastric digestion and must therefore be withdrawn before much good can be accomplished and again we cannot be assured that a sufficient amount of the calcium reaches the blood to be of value.

Believing that calcium does bear at least some positive relation to the healing of tuberculosis and with these objections to the oral administration of this salt in mind an attempt was made to find if it was possible to inject solutions of calcium directly into the blood stream in order to supply it with an amount of that salt which would be slightly in excess of the usual calcium content. After considerable observation and animal experimentation, it was found that solutions of calcium chloride could be administered intravenously over long periods of time without any apparent harmful results and this form of calcium has been used in the treatment of the cases included in this report.

The dose to be used was given much thought and study and it has been learned that many factors must be considered in adjusting the dose to meet the individual requirements of different patients. It is obvious that one of the most important purposes of this procedure is to saturate the blood with that amount of calcium which is apparently normal or slightly in excess of the normal percentage. To accomplish this it must be borne in mind that the strictest individualization of cases is imperative.

It must readily occur to any one that this saturation of the blood will be more quickly attained in a patient whose body weight is say ninety pounds, which is far below the average, than in one whose body weight is 175 pounds.

Hess (2) reports the calcium content of the blood of normal controls as determined by McCrudden's method. His figures in twelve cases range from 0.062 to 0.075 gram CaO to 1,000 c. c. of blood. In thin patients where the proportion of blood to a pound is greater than in fat ones it may be assumed that the normal calcium content does not exceed in any case calcium equal to twenty grains of calcium chloride. On the other hand patients weighing 125 pounds or less with deficient blood supply showing a long coagulation time and much calcium deficiency, must retain calcium in their blood stream equal to not less than eight grains of calcium chloride.

From this it becomes apparent that in administering calcium intravenously, the body weight of the patient must be taken into consideration in the adjustment of the dose. If an easily applied method of the estimation of the total blood content of the body were available it should be used instead of basing the estimate of blood on the body weight.

It has also been observed that some patients can tolerate larger doses of calcium than others. This may be due to the fact that there is a more marked deficiency of calcium in some tuberculous subjects than in others. A study of the coagulation time of the blood of all the cases treated has apparently been an aid in the adjustment of the dose. The coagulation time of the blood of most of the 120 cases observed has exceeded the normal time of eight minutes. In a number of cases, this time has been more than doubled. From observations of the coagulation time before beginning the injections and after each fifth injection it has been found that, as a rule, the clotting time has been reduced, and in ratio with this time reduction the dose has been decreased. Further observation of this factor

is necessary before conclusive data can be presented but its apparent value has been repeatedly impressed upon us.

It has been found that it is advisable to begin with a dose of one grain, gradually increasing until a maximum dose of six grains has been given. At this point the dose is slowly decreased as the coagulation time shortens, and that amount is given which will be found necessary to maintain the coagulation time at normal or slightly below normal. The injections have been continued from six months to one year.

The many difficulties encountered in making a clear stable solution of the calcium salt necessitated a careful routine method of preparation. The pure calcium salt is dissolved in freshly distilled water and brought to boiling. It is then neutralized by either acid or alkali and titrated. From this the proper strength solution is made. The solution of proper strength is then passed through a Pasteur-Chamberland filter into a measuring burette carefully protected from dust. From here the solution is run into sterile ampoules made of tested glass and sealed with rubber stoppers, after which the sealed ampoules are sterilized by fractional sterilization. This method yields a solution free from acid and permanent. It is sterile and ready for immediate use.

Now, after an observation which extends over three years and the treatment of ninety-six cases and the observation of many other cases in the practice of my confrères, it has been concluded that the intravenous use of calcium solutions is of value as an aid in the treatment of tuberculosis. It is not the purpose of this contribution to create the impression that this line of treatment is offered as a radical departure in the treatment of tuberculosis, but, on the other hand, it is believed to have been proved of value as an aid in the treatment, and it is recommended that it be used only in conjunction with any or all of the other recognized and established methods.

The results following this method have in a majority of the curable cases been surprisingly good, and, in many instances, patients who had failed to improve under other methods of treatment have made excellent improvement and uneventful recoveries when placed on calcium injections. Soon after the injections are begun there is a decided change in the clinical picture. The appetite and strength improves, cough lessens, and sputum decreases in amount. Regular sputum examinations have been made, and while the results have not been compared with findings following in cases not so treated, it has been apparent that the number of tubercle bacilli gradually decrease in number and disappear more uniformly than in other cases in which calcium has not been given intravenously. Calcium thus given appears to have a very marked tonic effect. Patients almost without exception become more comfortable and comment upon a feeling of well-being. Tabulation of 120 cases, taken in the order in which they presented themselves for treatment without selections being made, are herewith presented.

INCIPIENT CASES.

No. of cases.	Apparently cured.	Disease arrested.	Improved.	Unimproved.	Dead.
34	22	6	2	3	1

MODERATELY ADVANCED.

No. of cases.	Apparently cured.	Disease arrested.	Improved.	Unimproved.	Dead.
51	15	12	9	8	7

FAR ADVANCED.

No. of cases.	Apparently cured.	Disease arrested.	Improved.	Unimproved.	Dead.
35	3	—	10	4	18
120	40	18	21	15	26

Two cases of nontuberculous abscesses of the lungs have been treated by this method with most excellent results. The author reported one of these cases in the July issue of the *Indianapolis Medical Journal*. Dr. Frank Brayton, of Indianapolis, reports another case of nontuberculous abscess of the lung following pneumonia, treated by intravenous injection of calcium (3). Dr. Arthur A. Rang, of Washington, Indiana, and Dr. Samuel J. Copeland, of Indianapolis, have very kindly supplied reports of twenty-four cases included in the above tabulation.

REFERENCES.

1. BEASLEY: *Indianapolis Medical Journal*, January, 1915; February, 1916; July, 1916. 2. HESS: Calcium Factor in Hemophilia, *Johns Hopkins Bulletin*, xxvi, No. 297. 3. BRAYTON: *Indianapolis Medical Journal*, April, 1917.

427 Newton Claypool Building.

ACUTE APPENDICITIS.

By Alexander Nicoll, M. D., F. A. C. S.,
New York,
Professor of Clinical Surgery, Fordham University, School of Medicine; Surgical Director, Fordham Hospital, First Division; Attending Surgeon, Sea View Hospital.

(*Concluded from page 66.*)

Diagnosis.—It would seem that a careful examination of the patient and the finding of the signs enumerated should lead the physician to the correct diagnosis. I should like to call attention to the fact, however, that when you have made a diagnosis of appendicitis that is all you have done. You cannot definitely and consistently predict the actual condition of the inflamed appendix. The most vigorous rigidity and largest amount of reaction may, in certain patients, be called forth by a comparatively mild attack of inflammation which will take care of itself under any form of treatment, while on the other hand a vicious, deadly, overwhelming infection may placidly masquerade under signs and symptoms which are deceptively mild in appearance until the death blow has been struck and your patient is getting ready to die. The utmost skill on the part of the examiner may not avail in certain of these cases and it is well to bear in mind that cases occur—we meet them every day—in which the patient has appeared to be doing well until a sudden turn for the worse has called the surgeon post haste to open an abdomen in which peritonitis has actually existed for thirty-six hours or more. These things can be avoided, I believe, if the physician will bear in mind the remark just made, that the diagnosis of acute appendicitis is nothing more than a diagnosis of acute appendicitis and it is not possible for any man, no matter how great his diagnostic

gift may be, to predict accurately the condition of the appendix and the probable outcome of the inflammation.

The important feature of diagnosis seems to me to be, principally, the ability to differentiate between acute appendicitis, which condition I consider absolutely a surgical condition under practically all conditions, and other conditions which are distinctly nonoperative in their nature. Appendicitis closely simulates quite a number of acute intraabdominal conditions which are surgical in character and which call for laparotomy. The indications for treatment in these conditions are clear cut and differ not at all from the indications for treatment of appendicitis in so far as opening the abdominal cavity is concerned; and our principal concern, as a matter of fact, is the indication for operation. The nonoperative conditions, on the other hand, are serious ones which would be markedly increased in their gravity by an unnecessary opening of the abdominal cavity, and it is of the greatest importance that we make our differentiation accurately between acute appendicitis and this type of condition. Let us, therefore, consider for a moment some of the most common of these nonoperative, so called "medical," conditions. The outstanding conditions are pneumonia; gastroenteritis, especially of the abdominal grippe type; pyelitis; and acute exanthemata. It will be seen that our greatest difficulty lies in the conditions which affect children.

A very good dictum of a distinguished French clinician is "when children complain of pain in the stomach, examine the chest." This may be stretched to include adults as well. Very few surgeons have not at some time been placed in the position, an exceedingly trying one, of having to decide for or against operation in a little patient whose desperate condition is such that operation itself may be either a life saving or life destroying procedure—depending upon the actual underlying condition in the chest or abdomen. It is but fair to say that cases occur in which diagnosis is extremely difficult, and in which the outcome of noninterference is awaited with anxiety by the conscientious surgeon whose judgment has said to him, "pneumonia"! Again, it is not altogether uncommon to meet with the two conditions simultaneously, associated perhaps as cause and effect. The signs which should be of assistance in making a proper diagnosis may be stated as follows: In pneumonia the pain is likely to be irregular in position and to shift with equal irregularity. It is likely to be found high up in the abdominal cavity, almost too high for the pain of appendicitis, or it may be more or less confined to the position of the small intestine. Nausea and vomiting are quite likely to occur in children and not so likely to be met with in adult patients. Children not infrequently continue to vomit for forty-eight hours in pneumonic conditions with marked general symptoms of general septic invasion. Tenderness is likely to be as irregular as the pain, frequently being referred to widely separated points or areas within the abdominal cavity within a short space of time. True rigidity is not present, but the determination of this sign calls for all the examiner's skill, coupled with a vast amount of patience in obtaining the confidence of the patient in order to "unmask the abdomen." Temperature is high from the first, as a rule, 104° to 105° F., and frequently the attack is ushered in with a chill. The examination of the white blood cells shows a very high count, usually over 30,000, and this leucocytosis is present almost from the inception of the attack. Examination of the chest may reveal early signs of consolidation, but unfortunately these signs in the very early stages are very slight or absent and do not put in their appearance until twenty-four hours have passed. A careful observation of the breathing of the patient may disclose increased rapidity and a searching for air with dilating alæ nasi. Cough may be present early and its presence should not be ignored. The patient's face is usually flushed, and may be cyanotic. Enemas will usually produce movement of the intestines. The abdomen is likely to be retracted in the early stages. The patient's condition is profoundly toxic from the inception of the attack, and there is a quite apparent disproportion between the toxemia, the local abdominal signs, and the length of time of the existence of the illness. The patient is much too sick too soon for the condition to be primarily abdominal. A day or two of malaise with headaches may have preceded the attack.

I do not know of any more difficult position in which the general practitioner is placed than the one which calls for the immediate and correct diagnosis early in an attack of gastroenteritis associated with acute abdominal pain. As a rule the surgeon who is called into consultation has a much easier time of it because by the time he has arrived symptoms have had the opportunity of coming to the surface, are more marked, and the patient has had a chance to get rid of the pains and apparent rigidity which are to disappear spontaneously. The medical attendant is naturally torn between two conflicting desires, the wish to do his patient absolute justice and treat him along the lines of greatest safety, and the not unnatural repugnance of appearing in the unpleasant rôle of alarmist. The following suggestions are set down with a clear appreciation of the difficulty of diagnosis early in an attack, and a desire to be of assistance in what is unquestionably, at times, a predicament. In gastroenteritis due to errors in diet the pain is colicky in character, and continues so. The pain may be spoken of as productive in that it is soon accompanied by diarrhea, which is a constant sign. Nausea and vomiting are rare. Tenderness is widespread over the region of the small intestine, and frequently is not present in the intervals of the colicky pain. Both pain and tenderness are relieved by pressure; the patient wishes to lie prone, does so, and feels better for it. The pain and tenderness of appendicitis are aggravated by pressure of any sort, the patient wants to lie on his back, and usually is relieved, or relieves himself, by drawing up his leg or legs. Rigidity is absent. Temperature is rare. Leucocytosis is not present. In gastroenteritis of the so called abdominal grippe type the pain, vomiting, and tenderness are as above. The temperature is present early and may be high from the onset, 103° to 104° F., and the pulse rate is increased in keeping

with the temperature. The attack is usually ushered in with severe headache, and the usual signs of severe general toxemia make their appearance early. Again it is clearly seen that the patient is too sick too soon. Leucocytosis is constant and frequently very high, even climbing up to 50,000, as in a recent case of mine which went on to infection of the peritoneal cavity.

In the exanthemata the surgeon is not infrequently called upon to make a diagnosis of appendicular inflammation. The difficulty usually arises, as with pneumonia, before the diagnostic signs of the nonoperative condition have come forth clearly. Indeed, I feel that we have to deal with a condition here which is a little different from the usual problem; for I feel that here the diagnosis must be made between a nonoperative appendicitis and an operative type of the same condition. The explanation of the abdominal symptoms exhibited by these little patients is as follows: the appendix, especially in childhood, is very rich in lymphoid tissue. In the exanthemata, especially scarlatina, there is a general enlargement, engorgement, and hypertrophy of the lymphoid structures resulting in a generalized adenopathy. The faucial tonsils respond to the specific toxin, and the rest of the lymphoid tissue does the same. The collection of this tissue in the appendix wall does its share and the patient has not only a faucial tonsillitis, but an inflammation of his "abdominal tonsil" as well; thus he has, in effect, an inflammation located in his appendix, in reality an appendicitis. This little enlarged, engorged, inflamed appendix is no more to be removed than are the chains of glands on each side of the patient's neck. The importance lies therefore in determining first that his abdominal signs are but the expression of reaction to a specific toxin, and second the nature of the toxin as far as our present knowledge carries us. Points to be borne in mind, therefore, as aids to diagnosis in this type of condition are as follows: The history of the patient should put one on his guard, indicating the existence of two or three days of malaise before the onset of the abdominal symptoms. The fact of the existence of an epidemic is usually mentioned to the physician or surgeon who is not familiar with the conditions of health of the immediate neighborhood, and such warning is not to be lightly passed over. Pain is likely to be referred at once to the appendix area. Nausea and vomiting frequently are seen at the onset of scarlatina, but it is not at all unusual to have the disease set in with a convulsion, at least in the younger patients, a symptom I have never observed in appendicitis. Tenderness is present over the appendix. Rigidity is not present. Leucocytosis usually occurs in the scarlatina cases, but the percentage of polymorphonuclear cells is likely to be low. Mass does not occur. I believe that the best diagnostic point in this type of case is a proper appreciation of the "sickness" of these patients; they are, as a rule, altogether too sick and too generally poisoned for the apparent gravity of their abdominal signs. They, too, are too sick too soon. Careful examination is likely to show a general lymphadenopathy. Examination of the mouth and throat may give signs diagnostic of the exanthemata. The giving of an enema may be of assistance, always giving some result in the exanthemata as opposed to the stasis of true intraperitoneal inflammation. No mention of the appearance of a rash is made because it is only in the cases in which the rash is either absent or much delayed that the diagnosis is likely to be difficult.

Pyelitis at times may offer some difficulty in the matter of diagnosis, and considering the relative frequency of this condition, especially in the young, it may be well to review the points in which the two conditions may resemble one another, and to set down, as far as possible, the symptoms which may be of assistance in differential diagnosis. In pyelitis the history usually indicates a period in which there has been some malaise, before any local trouble is complained of. Pain is likely to be over the kidney region or along the course of the ureter. Nausea and vomiting are not likely to occur except with high fever. Tenderness may be present over the site of the usually placed appendix, but it is also possible to elicit pain on pressure in the costovertebral angle. Rigidity is found, if at all, in the costovertebral triangular space, but it may be found all along the course of the ureter in cases in which there is marked ureteritis. Temperature is usually high early in the condition, 104° to 105° F. in young children. Pulse rate is slow in proportion to the temperature. Leucocytosis is likely to be present, but as a rule the percentage of polymorphonuclear cells is comparatively low. Certain positive signs of pyelitis are likely to be present and their extreme importance is not to be glossed over. They are principally dysuria and changes in the urine, bacilluria, pus, etc. Finally, the patient's general "sickness" is out of all proportion to the severity of the abdominal signs, and he is "too sick too soon."

In conclusion, in reviewing the nonoperative conditions which are likely to simulate acute appendicitis, we are at once struck by the fact that they all have two points in common, and upon the proper appreciation of these two points and the knowledge of their significance depends the success or failure of diagnosis: 1. The history indicates that the abdominal signs were not the primary cause of the patient's illness. 2. A careful survey of the patient warns the surgeon that the patient is too sick too soon for the condition to be primarily appendicitis.

A discussion of conditions other than the nonoperative may properly be dismissed with the statement that there are many conditions which call for operation and which resemble appendicitis very closely. The indication for treatment is clear in these cases, and that treatment is similar, in general operative approach, to the treatment of appendicitis. We have, therefore, our problem reduced to the terms of a more or less purely academic discussion, which may be prolonged at the pleasure of the writer; let us go on.

Treatment.—As to treatment, my own feelings lead me to dismiss the matter almost in a word. The treatment of acute appendicitis is primarily operative, and any form of treatment which delays operative relief is contrary to the best interests of the patient. Many conversations with physicians have

led me to believe that there is supposed to be a class of cases in which operation is contraindicated because of various apparent indications that the patient is unable to stand either the shock of anesthesia, the operative manipulations, or the toxicity of general anesthesia. These classes of patients have been indicated as follows: 1. The very aged, in whom any operation is fraught with peril because of the inability of the aged patient to withstand even a relatively small amount of shock. 2. The patient who has a rapidly failing compensation of heart, or liver, or kidneys, in whom the added shock of general anesthesia, plus the shock of operation, and the toxicity of the anesthetic, would be sufficient to cause complete destruction of compensation and the consequent death of the patient from the exacerbation of the visceral disease. 3. The patient whose peritoneal cavity has been rapidly flooded with infectious material as the result of huge perforation, and whose condition is one of tremendous shock, bordering on collapse. Is "reaction" to be awaited here?

I believe that "conscientious objectors" along these lines are objectors because of their failure to understand the ease and simplicity of the properly conducted operation, the possibilities of local anesthesia combined with the administration of gas and oxygen, and the freedom from toxicity of this combination of anesthetics. It is well to point out that the operative procedures are most simple and easy in the class of cases which show the greatest shock and prostration, because of the usual absence of adhesions in this type of case. To answer, seriatim, the above objections we may say: 1. The aged very seldom have appendicitis, but when they do they are more likely to die of the disease than from the methods of relief held out to them. 2. The cases in which there is rapidly failing compensation of visceral lesions will suffer more damage from the toxins of the disease than they will from the above indicated anesthesia, and the operation may be made practically shockless. 3. The patient who is shocked as the result of flooding of the peritoneal cavity with pus will scarcely be improved if the surgeon tides him over his shock only to allow him to be overwhelmed with the sepsis of the untreated focus of infection.

I should be unwilling to leave the subject of treatment in general without putting in a special plea for one class of patients. I should like to be especially emphatic, and say that under no circumstances are there any contraindications to operation, and that operation cannot be done too soon for the children. These little patients have very special indications for early operation, and the two most compelling are these: Children tend to manifest gangrene in a very high percentage of cases. The general peritoneal cavity of children is very poorly protected against infection. There are, perhaps, many reasons for this inefficiency of the protective forces of the child, but one is sufficient, the undeveloped condition of the omentum, that organ without which the surgery of the peritoneal cavity would be as a book that is closed.

When to operate.—As to the question of when to operate, two words suffice: *at once.*

Operation.—The operation to be properly done must meet these conditions: It must be simple in method, it must be gently and quickly done, and it must be complete. The question may be properly approached from a separate consideration of three general clinical pictures which are customarily met with: In the first twenty-four hours; in the face of a diffuse peritonitis; in the stage of abscess formation.

In twenty-four hour cases the pathological process is practically limited to the appendix, the indications are met when the abdomen is opened and the appendix is removed. The question of drainage must be settled by the surgeon who is called upon to make up his mind that the peritoneal process is such that pus either will form or will not. It is usually quite safe to omit drainage altogether in the cases operated in the first twenty-four hours.

In the presence of diffuse peritonitis the peritoneum is visibly inflamed and may contain free pus, or the peritoneal reaction may be expressed in the form of massive, but easily broken, adhesions. In either case drain the region, and it is good and conservative surgery to drain all cases when operation is done in the face of a diffuse peritonitis or one in which the fragility and apparent inefficiency of the adhesions might lead one to believe that the process is still unchecked.

In the stage of abscess formation, I believe that it is well to approach the entire pathological area from a point not as yet involved in the inflammatory reaction. Thus I make it a practice so to enter the peritoneal cavity that the actual entering of the infected mass is avoided. Once in, the peritoneal cavity is to be walled off by a cofferdam of gauze pads, moistened with saline, so placed that the entire infected area is isolated. As a rule I make use of three pads for this purpose, one placed below the abscess to protect the pelvic peritoneum, one to the inner side to protect the centre and left side of the abdominal cavity, and one above the mass to prevent leakage up the right lateral gutter of the posterior abdominal wall. When this cofferdam has been placed the abscess may be approached and dealt with with the utmost safety, in fact almost as though the entire infected area were without the peritoneal cavity proper. When the abscess cavity has been entered sponging is avoided and the fluids removed by means of the Kenyon sucker. The appendix is sought for and removed in as simple a manner as possible, good retraction enabling the surgeon to reinforce touch with sight; drains are placed according to the involved portions of the peritoneal cavity—usually one into the right lateral gutter and one into the pelvis—and the abdomen is closed. The cases in which the appendix cannot be removed in this stage of abscess formation must be very few indeed, and the importance of removal cannot be overestimated; indeed, a paraphrase of the well known legal principle should hold good here—a man should be but once placed in danger of death from an attack of appendicitis.

Aftertreatment.—This phase of the question is so important and so complex that it is not possible to do it justice in a paper of this sort. I shall, therefore, briefly outline the methods which we have

found to be successful in the first surgical division at Fordham. As a rule aftertreatment is carried out along these lines: The patient is immediately placed in Fowler's position. Enough morphine is given to control severe pain and to prevent the shock of such pain. After twenty-four hours eserine salicylate is combined with the morphine to prevent undue intestinal relaxation. The morphine is discontinued as soon as possible, but the eserine is given regularly in doses of grain 1/150 every four hours till movement of the bowels is satisfactory. Nothing is allowed by mouth but hot water in sips until nausea and vomiting cease. If vomiting continues after twenty-four hours the stomach is washed out after every vomiting attack. Movement of the bowels is secured by means of enema as soon as there is indication that the peritoneal inflammation has been controlled, usually at the end of thirty-six hours, and never in the first twenty-four hours. Fluid diet is started after the patient has been six hours without vomiting and the first thing given as a rule in something for which the patient expresses appetite. Tea is an excellent beginning for many patients, but I am accustomed to gratify appetite for many strange forms of fluids and find that this attention to the patient's "wants" works well. After twenty-four hours of fluid diet the patient is placed on soft diet.

When pulse, temperature, and local condition indicate that the peritoneal inflammation is under control, and drainage is seen to be efficient, calomel and soda sequence is given, and once the patient's bowels move well from above, he is rapidly returned to regular diet and nourishment is gently forced.

119 West Eighty-eighth Street.

THE TREATMENT OF LOCOMOTOR ATAXIA BY THE MALONEY METHOD.*

By Heinrich F. Wolf, M. D.,
New York,
Chief of the Department of Physical Therapy, Mt. Sinai Hospital and Dispensary, New York.

The term "locomotor ataxia" shows how much importance was given to the symptom of ataxia in cases of tabes dorsalis. At the time when neither the pathology nor the etiology of this disease was known it was natural that the inability to walk was regarded as the cardinal symptom. Frenkel's publication of his system of reeducation was therefore hailed as a great progress. The underlying principle of this method is the replacing of reflex actions as the control of the walking by control by the eye. Frenkel held that the sensibility improved in the course of the treatment, but I have never been convinced of this. I should even say that it is psychologically incorrect. If one function is trained to replace a missing or failing function, the patient will be inclined to use the new activation exclusively to the detriment of the failing one. The same would be true if an active muscle is used instead of a weak and inactive one. I have used the Frenkel methods for about twenty years and I have grown more dissatisfied with it as time went on. I have come to the conclusion that the Frenkel method is incorrect in every feature, but that it accomplished the very important purpose of directing attention to the idea of reeducation. From the new standpoint it appears wrong to allow the patient to control the more or less automatic action of walking by his eyes, as anything which catches his eye and diverts his attention or interferes with vision, as a bad light, upsets at once the established control. This has been the general experience.

The method of Doctor Maloney has practically done away with all the shortcomings of the Frenkel method. There are two basic principles on which Maloney has founded his treatment, relaxation and reeducation. It is immediately noticeable, on looking at a tabetic, that all his attention is focused on his walking and that he keeps his entire body stiff. This is due to fear. The patient is conscious of the lack of natural control when he is walking and tries to compensate for it by keeping all the muscles, even those that are not needed for the particular action, in a tense state. The Frenkel method has tended to increase this tension. Maloney, however, set out to combat this and accomplished it by his method of relaxation. I believe that the importance of relaxation has not been appreciated in the past and I dare say that we do not understand its value even now. Proper relaxation is at the bottom of every great and lasting success. This is a very difficult end to achieve, particularly in this country where everything is done under high pressure and where the nerves are constantly under high tension.

Let us understand the situation properly. The supply of energy that our body and mind may draw upon is limited. Energy used up in one way cannot be used in another. The best athlete is he who uses only those muscles that are needed for the performance of a feat, and not all of them promiscuously. A wrestler could not slip snakelike out of the grip of his opponent if he kept all his muscles stiff. A dancer or a crack runner unconsciously only uses those muscles that he needs, and it is exactly this husbanding of his forces which makes him look graceful. An analogy can be seen in mental feats. How often does one try vainly to remember a word or a fact which has slipped his memory and then, when the effort is given up and the mind allowed to wander, suddenly the elusive fact is recalled. A definite conscious effort to make a poem will rarely be successful. The old meistersingers who constructed poems according to fixed rules did not exactly reach the pinnacle of Parnassus. The Egyptian artist four or five thousand years before Christ formed with his hands potteries which make us gasp: he knew nothing about the science of his work, but natural instinct and his sense of the beautiful guided his hands when he made his form.

In the treatment of every case of locomotor ataxia relaxation is of very great importance. In some cases, which I have described in a recent paper (1), relaxation alone will improve the walking to a considerable extent. The fear subsides, the anarchical action of the muscles gives way to cooperation and a resulting improvement of the walking. Relaxa-

*Read before the Orthopedic Section of the Academy of Medicine, February 20, 1917.

tion is absolutely necessary, too, for the second stage of the treatment, the actual reeducation. I have never noticed that the deep sensibility of the tabetics has improved under Frenkel's treatment, but I know that it is accomplished through the Maloney method. It is well known that in destructive and degenerative processes in the central nervous system not all the fibres are destroyed. The discovery that persons who are "hard of hearing" sometimes hear things that are not meant for them is a common and embarrassing experience. This is due to the fact that these people do not always pay attention to the slight impulses which they receive. We know that patients who had an attack of acute infantile paralysis many years ago can gain strength in muscles which were believed to be completely atrophied. I have now under observation a girl twenty years of age who had an acute attack fifteen years ago which left her hand quite useless. Three months' treatment resulted to my great astonishment in a reestablishment of usefulness of the hand. This does not mean that new ganglions, new nerve fibres were developed through the treatment, but that some existed which had not been destroyed and were capable of development. Even in the worst cases of locomotor ataxia in which a first examination would lead one to suppose that sensory nerve fibres were entirely gone, this is not the case. It must be understood that the impulses through these few fibres are so slight that they are of no use to the patient and he therefore neglects them altogether. If you blindfold this patient, induce full relaxation and direct his attention to one particular joint, you will notice that after a certain time the motion which was at first not perceived by the patient can be distinguished later. These impulses are generally so slight that the patient does not notice them and would not learn to notice them if he were not blindfolded or if anything distracted his attention. It is therefore necessary that the treatment should not be given in the presence of others. One joint after the other is taken up in this same way in order that the sensibility should be revived. The patient is placed in a reclining position and relaxes. He may wear pajamas and socks. We generally begin with the treatment of the ankle joints. We grasp the foot with one hand and move it gently up and down. If, as frequently happens, the patient does not recognize the movement, we ask him to focus his attention on any sensation he may have in that foot. After a number of movements the patient will say that he feels something. Now we specify the movement as follows: "The motion which you notice now is a downward motion"—or upward motion. If we continue this for a certain time, the patient learns to associate the sensation with the movement. It often happens that the patient believes he feels the downward motion while the foot is moved upward and it is our task to correct this erroneous interpretation of the sensation. The same exercises are performed with all the joints. Once the patient has interpreted sensation properly, much progress is made and we can proceed to the active, guided, and resistance movements. The rationality of these movements is evident. Even if sensibility has improved, the active motion will not be coordinated, because the proper cooperation of the muscles is lacking, particularly because the energy sent out into the different muscles is not properly distributed. To correct this, we guide the motions, i. e., we allow the patient to make a certain motion, but we guide him on his way, that he may correctly appreciate the sensation he is experiencing. By proper frequent repetition we can make the patient correlate the motion and the corresponding sensation. This means in fact a reestablishment of the normal control of the muscles.

The object of this paper is not so much to give an exposition of this method, which would be impossible without a demonstration, but to show the physiological and psychological foundation of the Maloney method. The best proof of its rationality is that blind tabetics are very rarely atactic. I would like to mention here a very interesting case. Three years ago I treated a patient who was a blind tabetic without ataxia. He suddenly lost his entire sensibility and was entirely helpless, as he had not the faintest idea of the position of his legs. It was very interesting to note how the patient gradually regained some of the coordination within two months. Unfortunately the patient died from pyelonephritis.

The difference between the Maloney treatment and the Frenkel treatment is very great and it lies particularly in the fact that the pure routine procedure, as it is practised according to the Frenkel method, is impossible. Each joint and each part must be treated according to its condition. Resistance exercises must be graduated according to the strength of the muscles; the strength of the weak one must be educated up to the strength of the stronger one to produce the proper balance. Only after sensation has been improved can we proceed to crawling and walking exercises. We first let the patient crawl on his knees and hands, gradually changing to walking on his knees, and then to actual walking. I personally do not believe in making the patient run or do stunts. I only try to make the walking look as normal as possible. There is much of mechanical treatment connected with it, and as the treatment ought to be given, if possible, twice a day for about an hour each time, I consider it advisable to instruct an attendant or a member of the household in the mechanical part under the supervision of the physician. I prefer women attendants, as these only have the patience which is necessary to do a certain motion hundreds of times without becoming neglectful.

I wish particularly to emphasize the absolute necessity nowadays, since we have an efficient method of treatment, of giving the patient the benefit of the specific treatment. I should never attempt to treat the patient while he is receiving intraspinous injections, as one injection easily undoes the strenuous work of weeks. I realize that this paper is not by any means a complete exposition of the subject, but I intended merely to point out the principles of this method in order that the practitioner might work out the system for himself.

REFERENCE.

1. WOLF: New York Medical Journal, September 9, 1916.

161 West Eighty-sixth Street.

Our Readers' Monthly Prize Discussions

Twenty-Five Dollars Is Awarded for the Most Satisfactory Paper

All persons, whether subscribers or not, are invited to compete for the prize of $25 offered for the reply deemed best by the editors to the following questions:

CLXXXIII.—How do you treat excessive menstruation in the unmarried? (*Closed.*)

CLXXXIV.—How do you correct bad spelling and forgetting in children? (*Answers due not later than July 15.*)

CLXXXV.—How do you treat acute tonsillar infections? (*Answers due not later than August 15.*)

The award will be based solely on the value of the information contained in the answer. No importance will be attached to literary style. Answers should preferably contain not more than six hundred words, and should be written on one side of the paper only. All papers submitted become the property of the JOURNAL, and should bear the full name and address of the author for publication. The prize will not be awarded to the same person more than once within a year.

The prize of $25 for the best answer to Question CLXXXII has been awarded to Dr. Nathan Hirsch, of Brooklyn, N. Y., whose paper appeared on page 73.

PRIZE QUESTION CLXXXII.
INFANTILE DIARRHEA PROPHYLAXIS.

(*Concluded from page 74.*)

Dr. John P. H. Murphy, of Washington, D. C., says:

In considering the prevention of infantile diarrhea we must remember, 1, that the digestive organs in the young are severely taxed to meet the needs of the growing body; and, 2, that the intestinal mucosa is delicate, vulnerable, and constantly exposed to chemical and mechanical irritation. While infants tend to adapt themselves to environment, each is nevertheless a law unto itself, differing from others in assimilative efficiency; when, therefore, these powers become weak or dormant, digestive disturbances and diarrhea under certain climatic conditions often go hand in hand. As the condition is most prevalent in summer, increasing usually during the hot and sultry months of July and August, the theory that stagnant heat prevailing in poorly ventilated and unhygienic apartments acts as a powerful depressant to infantile vitality seems obvious. Now add improper irregular artificial feeding in overclad babies and the principal etiological factors seem to have been ascertained.

With a view to proper prophylaxis, especially during the dreaded second summer, let us first advise that both mother and child go to the country. If this is impossible, plenty of fresh air in a large, well ventilated room, a cotton slip, diaper, and seasonable clothing are essential with frequent excursions to the seashore, cleanliness, and avoidance of contamination. Breast feeding in a healthy mother is far preferable and she should be educated in the care of her offspring. Her nipples should be kept soft, healthy, and pliable by olive oil, being washed with Castile soap before and after nursing. In artificially fed infants, bottles and rubber nipples should be boiled before using. Pure fresh milk from a herd of Holstein cows, containing not more than ten thousand bacteria to one c. c., delivered by sanitary dealers or from a milk station, is best. It should be heated to about body temperature when used and may be pasteurized if necessary. Overfeeding, especially on hot days, should be avoided. The quantity of each feeding may be cut to one half, the intervals increased, and the deficiency made up by boiled, cooled water given freely, observing of course the digestive capacity without ill effect.

Diapers should be changed frequently and the stools watched. If they show evidences of mucus, become clay colored or dark and foul smelling, 0.1 grain of calomel every half hour for ten doses in milk usually aids in the former, or 0.1 grain of podophyllin every two hours gives relief in the latter case. A small glycerin or soap suppository will often aid, while milk of magnesia, given occasionally in the milk keeps the bowels in good order. A little lime water added to the milk alters the casein and helps digestion, while eructations of gas may be relieved by a few drops of anise, peppermint, or brandy. Keep the mouth and gums clean, especially during teething. The mother should study her mental and physical condition.

Dr. Frank J. Williams, of Albany, writes:

The surest preventive of infantile diarrhea is an exclusive diet of breast milk from a healthy mother whose digestive and eliminative organs are in a normal state of functional activity. Unless the quantity of milk secreted by the breasts is wholly inadequate for the infant's needs, no additions are to be made to this diet except a little boiled water at times.

The artificially fed baby is daily exposed to the dangers of unsuitable food and bacteria, the usual causes of diarrheal disorders. A food combination properly adapted to the child's digestive power, regular feeding intervals and exclusion of all other articles of food are prime essentials. When the baby has a slight intestinal upset, as indicated by an abnormality in the stools, prompt measures will often abort more serious disturbances. A dose of castor oil is indicated when the first evidence of intestinal indigestion is observed, in order that all irritant accumulations may be removed. During the next twelve to twenty-four hours following this purgation absolute rest is ordered and no milk or other food given except barley water. The resumption of feeding is then started with small amounts, and gradually increasing up to the proper formula. With the asset of any acute disease the strength of the formula should be weakened at once to avoid taxing the digestion to its full capacity.

In hot weather the child is to be kept in as cool a place as possible and dressed in light loose fitting garments. Especial care is necessary for the bottle baby during the summer months, since intense heat

lowers his resistance to unsuitable food and its bacteria. His milk should be either pasteurized or certified, and the bottles and nipples properly cleansed and sterilized. Bacteria laden pacifiers should be absolutely forbidden and toys should not be allowed to enter the baby's mouth. Paper napkins which can be burned promptly should be employed on a child showing frequent watery green stools suggesting infectious diarrhea. This precaution will minimize the danger of its transmission, particularly if an institutional case or otherwise in close association with others.

Dr. Maurice Chideckel, of Baltimore, Md., says:

1. Preach the gospel of soap and water and of boiled water all the year round. Anything the baby has to take into his mouth must be clean, and any utensil the baby eats or drinks from must be washed with boiled water before and after using. Pacifiers are germ laden and harmful. 2. Encourage the mother to nurse her child. Every mother must be made to know that no milk and no milk formulas can ever equal the milk of mother. 3. Instruct mothers on the importance of correct feeding and the disastrous results wrought by overfeeding. Overfeeding leads to serious gastrointestinal trouble and underfeeding and bad food cause a lowering of resistance and make the baby a ready victim to disease. A feeble, anemic child suffering from malnutrition may drag along during the winter months and succumb to diarrhea in the hot months. 4. Teach the district nurse and the social service men and women the importance of gaining the confidence of those they desire to help. 5. Let practitioners never forget for a moment that there is no prescribed formula for all babies. Each little patient differs from the next one, each possesses a different degree of resistance and an entirely different power of digestion. 6. All dairies should be under the supervision of the Board of Health, and strict precautions observed in every process of marketing the milk. 7. Swat the fly. The common house fly spreads endemic dysentery. Make the screening of doors and windows compulsory. 8. Make summer diarrhea a reportable disease, and treat it like scarlet fever or diphtheria as to isolation. Summer diarrhea is an infectious and a contagious disease. The stools of a diarrhea case must be disposed of as are the stools of typhoid fever. Every community should maintain an isolation hospital for summer diarrhea cases to be situated in the country, where the little sufferer should have the benefit of fresh, healthy air as well as expert medical attention. 9. Teaching the mother the value of fresh air, wide open windows, and the importance of proper dressing of the child. While loss of heat by radiation is harmful and causes a lack of resistance, too much clothing is worse and predisposes the child to summer diarrhea. Cool garments and few is the proper way of dressing the child during the hot spell. 10. The practice of mothers taking their children to country places at the first signs of enteritis should be stopped. A crowded country place with no medical supervision is many times worse than a crowded tenement house. The child should be sent to a hospital in the country or to a hospital in the city where even there an abundance of fresh air is to be gotten besides medical treatment. 11. Do not give so called expectorants to young children. They are unable to expectorate, so they swallow mucus, and acute intestinal disorders are produced. 12. Stop milk at the first sign of enteritis, wash out the stomach at once with sodium bicarbonate besides intestinal cleansing and colonic flushing. These and courageous starvation will often prevent the development of summer diarrhea.

Dr. George F. Baier, Jr., of Philadelphia, writes:

The prevention of infantile diarrhea is first and foremost, a problem of hygiene and cleanliness—the daily morning bath, washing the baby's face at bedtime, cleanliness of his clothes, prompt removal of soiled diapers, dirty flannels, and linens, and cleanliness of bedclothes. Toys and trinkets handled by the baby should be clean and capable of being cleaned. The mother or others who handle the baby should have clean hands and clean clothes. I do not believe any baby enjoys promiscuous kisses on its mouth. If the baby must be kissed, kiss him on the cheek. The elimination of flies is of next importance. Flies are extremely industrious carriers of all kinds of bacteria and dirt. Do not let flies and babies fraternize. Keep the baby covered with fly netting; keep the doors and windows screened; destroy the breeding places of flies. For a baby to withstand the conditions likely to produce diarrhea he should be as nearly perfectly healthy as possible, and one of the agents necessary to bring about this desirable condition is fresh air. I do not believe that a baby should be out on a porch in all kinds of weather, but a plentiful supply of fresh air can be secured without subjecting the baby to hardships. A mother who nurses her baby should keep her nipples clean by washing with a weak solution of borax.

When a breast fed baby with conditions as outlined nearly ideal has diarrhea, the diet of the mother should be looked into. Certain articles of diet and certain drugs have a tendency to make mother's milk laxative. If the mother is constipated, other means than drugs should correct it.

If the baby is a bottle fed baby see that the bottle and nipple are clean. See that the formula is the proper one for the baby. Increasing or decreasing the amount of fat in the mixture may have remarkable results. Never give the baby the remains of a previous meal. When two or three ounces remaining in the bottle are taken a half hour or hour afterwards, the bottle may lie around on the floor or table, flies feast on the nipple and later the baby has a severe diarrhea.

If the baby has diarrhea under good hygienic conditions the trouble may lie in the stomach or intestinal tract. Slight inflammations or so called "colds" may be the cause. These must be sought out and corrected. Worms may be the factor. Some doctors do not believe in worms and I at one time was in that class. I believe now, however, that this trouble should be seriously considered in connection with diarrhea. Also I have read that teething never produced anything but teeth, but here again experience is a great teacher and I believe that teething sometimes produces diarrhea.

Medicine and Surgery in the Army and Navy

GIVE THE MILITARY SURGEON SKILLED AND ADEQUATE ASSISTANCE.

He Cannot Do It All.

By J. Madison Taylor, M. D.,
Philadelphia,
Professor of Applied Therapeutics, Medical Department, Temple University.

Now that history has proved beyond all question that the first line of defense—army or navy—is the ceaseless vigilance, skill, and industry of the surgeon, the medical expert, we can maintain with less temerity not only that the Medical Corps of the army and navy should be composed only of those most highly qualified, efficient, and capable of meeting every emergency, but also, what is equally necessary, that they should be given skilled and adequate assistance. We have no desire to be hypercritical of the Medical Department of the army and navy—we realize fully the serious burdens they are carrying—but in my judgment there is grave peril that in the near future the demands upon the military medical service will be so many and serious that it may break down from overwork. It is to prevent this, to anticipate, that we make the constructive suggestion that steps be taken immediately to provide a sufficient number of assistants skilled in all those branches of service required for the Medical Corps.

How can this best be done? Everyone realizes that medicine has grown and developed by leaps and bounds since the Civil War, that there has been division and subdivision of work so that efficient service can be rendered only by the broadest distribution of responsibilities and the closest cooperation of diversified specialties. The whole subject is merged into a congeries of different and yet coordinated lines of work, and no man living has it in him to be master of them all. Hence, it is practically impossible for any one, however able, to be what is fondly assumed by the public and many selfsatisfied individuals, a complete all-round expert capable of coping with any and all conditions of the variegated medical industries, so to speak. Medicine has grown too far, its demands too numerous, and its necessities far too comprehensive to accomplish all that.

The medical man of the army and navy comes nearest to realizing this symbolic and wholly imaginary embodiment of omniscience, but in view of the terrific demands made upon him by modern warfare in time and work, if ever a man needed skilled and adequate assistance, he is the man, and yet our army and navy is proceeding in the upbuilding of its medical service along the old, old lines of expecting the medical men to "do it all." The military service of France, Germany, Japan, and other countries gives its medical men proper and sufficient assistance. We should do no less; we ought to do more.

There are several ways through which this assistance can be given—by utilizing medical students, by utilizing nurses, and by utilizing pharmacists. The first is economically unwise, because medical students are potential physicians and surgeons, and will be needed later on to take the places of the medical men now in the service. The second is objectionable by reason of the limitation of a nurse's training along medical lines and also her sex. The third is the most promising, because it furnishes material that, with but a little intensive training, could be made most helpful to the physician and the surgeon. He could cover more ground more thoroughly, more deliberately, and more creditably to himself, to the service, to his country, and to all of humanity.

The skilled pharmacist of today has had collegiate training and years of practical experience, with a manipulative skill in the handling of materials that eminently fits him for minor medical and surgical work. At the present time the pharmacist is taught a series of subjects which qualifies him to supplement the work of the surgeon, on closely correlated lines, especially in chemistry, bacteriology, clinical laboratory investigation, röntgenography, in assaying drugs, foods, and other supplies, in analyzing human excretions, blood, sputum, etc., in testing drinking water, food products, soils as well as in toxicology and drug compounding and dispensing. The pharmacist is familiar, also, with minor ailments and injuries and their treatment. With a little training he could readily be qualified to extend this field of activities to an extent which would enormously aid and comfort the surgeon when pressed by urgent demands on his time and attention.

In any event the services he could render are numerous, among them note taking, examinations, diagnoses of minor ailments, prompt clinical laboratory findings and opinions would be invaluable. He could act as expert anesthetist, as assistant in many operative directions, and could apply the less complicated dressings and plaster casts, and variously hold up the hands of the surgeon. He could supply much of the detail of medical advice in hygiene and dietetics. The whole subject of sanitation falls naturally within his purview, the precautions of hygiene, of preventive medicine generally, also applied bacteriology, disinfection, and other prophylactic necessities of modern warfare.

Justice to the medical men of the army and navy demands that they be given adequate assistance in the prosecution of their work, and the suggestion that skilled pharmacists be given a commissioned rank in the army and navy, and that they be made, also, medical and surgical assistants, will meet, we believe not only with the unqualified approval of the medical profession generally, but with that of the public whose interests are still further protected.

1504 Pine Street.

[In connection with Doctor Taylor's well put and, it is to be hoped, well taken plea, attention is invited to the letter of Frederick J. Wulling, president of the American Pharmaceutical Association, on page 147 of this issue.—Editors.]

MEDICAL SCHOOLS IN WAR.*

By Francis Carter Wood, M. D.,
New York,
Director of Cancer Research, Columbia University.

This country, Doctor Wood said, had suddenly found that she had undertaken an enormous task for which she was very ill prepared. Everything now pointed to the probability of a long war, a war which would strain the resources of the country as much as did the war of 1861. Existing conditions had brought the realization that preparation must begin from the bottom up, and it must be remembered that a fundamental part of such preparation was to keep the ranks of the medical profession full of young men who would be able to act as army surgeons. The civil population would have to be cared for by those physically incapable of entering the army or too old to serve. It was imperative, therefore, to continue to turn out medical students, not only this year and next, but for three or four years to come. The experience of France and England showed that the losses occurring among medical men in active service were large. It was reported that the failure of the English to keep the medical schools open, had resulted in a shortage of medical men. In France the situation was reported to be equally bad. In both countries the civil population was suffering from the lack of medical attendance. The insufficiency of proper care was demonstrated by the reports that the English and French returned to the trenches only some sixty per cent. of their wounded, while the Germans returned close to ninety per cent. Therefore, a teaching staff sufficient to train the younger men must be retained on duty in the medical schools. It was particularly important that a large proportion at least of the laboratory workers be held; they would be most needed in the investigation of new problems which would arise, examples of which would occur to everyone. The treatment of gas poisoning cases, for instance, had been very ineffective because of a lack of general knowledge concerning the condition, although a certain number occurred during the year in every large city in this country from the escape of ammonia or other toxic fumes in manufacturing plants. The study of accidental poisonings noted in connection with the manufacture of trinitrotoluol and their effects was a phase which had recently arisen. As canned foods would contribute largely to the diet of the soldiers, the study of epidemics of so called ptomaine poisoning, occasionally noted after the use of such food, should be thoroughly carried out. Such work would be just as important in deciding the ultimate issues of the war as would be the military skill of the soldiers. The teaching hospitals would have to be run with shortened staffs and it might be necessary to fuse during the war some of the dispensaries in order to make up for the shortage caused by the men who had volunteered. The course of medical instruction in the colleges might also be shortened as much as was possible consistent with the existing laws governing medical practice. The summers could be used for clinical clerkships and practical teaching in the clinics. At the end of the second year, the summer might very well be devoted to a course in military hygiene and field work; such a practical course would be very valuable, even if the war did not continue. In the third year, more military hygiene should be taught and certain special work which was necessary for the medical officer, such as map reading, should be given, possibly in the evenings. These courses should be given preferably by army medical men, as had been done at Columbia University this winter; or, if this was not possible, by competent physicians trained by the army staff. For nearly two years, now, credit had been given at Columbia to those who had served abroad in base hospitals as it had been found that this service formed an admirable and satisfactory training. This would shorten the period of preparation required for army service. The new Columbia War Hospital would undoubtedly serve for just this purpose and afford to the army, the Red Cross, and the medical school an opportunity to give instructions to physicians, medical students, and nurses which would fit them most rapidly and efficiently for immediate service to the country.

*Abstract of paper read before the Medical Society of the County of New York, May 28, 1917.

THE COMMITTEE ON HOSPITAL AND MEDICAL FACILITIES OF THE MAYOR'S COMMITTEE FOR NATIONAL DEFENSE.*

By S. S. Goldwater, M. D.,
New York.
Chairman of the Committee on Hospital and Medical Facilities, Mayor's Committee for National Defense.

Doctor Goldwater gave an account of the part of the work of military preparedness in which the Committee is engaged. Things were happening slowly and the Committee at present was in position to report plans and program rather than actual performance. The reason the Committee was created was because great medical resources had to be built up and organized in the city. Questionnaires from the various departments in Washington had not produced satisfactory results, and it became evident that an organized local survey of the resources of the city should be made for the benefit of the army and navy so that plans could be laid to cover future requirements and accurate and adequate tabulations placed on file. For this purpose a central committee was called into existence which included representatives of all the great municipal hospital departments and fifteen of the leading private hospitals. This did not include all the medical resources of the city. Every general and every appropriate special hospital in New York with a capacity of 100 beds—sixty-six hospitals in all—was represented in the Council of Associated Hospitals. Not only the members of the Committee but the executive office force consisted of volunteers.

The Committee had five functions: 1, to ascertain the requirements of the Government; 2, to make an intelligent, comprehensive survey of the medical institutional resources of New York city and vicinity; 3, to bring about the adaptation of

*Abstract of paper read before the Medical Society of the County of New York, May 28, 1917.

these resources to Government requirements; 4, to conserve these resources, and 5, to expand these resources.

Correspondence with the War Department showed that in certain directions needs might present themselves in short order. When Congress decided there was to be conscription and that more than one million men were to be gathered in mobilization camps for training, it was realized that for a time there would be inadequate medical facilities at the camps. It was obvious that a certain proportion of the sick would have to be brought to the hospitals of the nearest cities. General Gorgas said he did not expect to have adequate hospital facilities at first and there would be a transference to the city hospitals of major surgical cases not of an imperative character. The question came up as to pay for this service and under what arrangements the patients would be admitted and discharged. It was arranged that admission and discharge would be done by a representative of the army and the actual care undertaken by the members of the local hospital staff. Suitable compensation for the men performing this work had not yet been arranged; the cooperating hospitals, however, would be paid a per capita allowance. Cases of tuberculosis and insanity would be cared for in institutions belonging to the army and navy, and they would also take care of convalescents in their own convalescent camps.

Taking up the question of the resources of the city, preparations for war included the entire population. The civilian population should not be neglected in order to take care of the soldiers, and that was one of the objects of the Committee. The Committee asked the hospitals what they could do, 1, immediately; 2, in twenty-four hours; 3, at the end of a week, and 4, at the end of a month. The figures given were not regarded as final, but before acceptance were studied in connection with the average number of admissions and discharges—men, women and children; the average of vacant beds, etc. Out of these studies had come the following conclusions: The municipal hospitals, within one month, without seriously neglecting the routine care of the acutely sick, could supply 2,116 beds; private general hospitals, 1,974; special hospitals, 386. As to the adaptation of the resources, some of the special hospitals—for instance, one for women and children—were anxious to turn out their patients and take in soldiers; but they were persuaded to continue their existing work and instead to expand their resources to take in more of the cases they had always handled so as to leave room in more suitable hospitals for the care of the soldiers. Everywhere a disposition to cooperate had been shown; each hospital was ready to adapt itself to the needs of the whole. It might be found necessary to consolidate dispensaries when many of the young physicians enlisted in the army Medical Corps.

The question of the transportation of soldiers from camp to hospital and of patients from one hospital to another to make room for soldiers was arranged with the aid of the Board of Ambulance Service which stood ready to concentrate 110 ambulances for this work. Many women physicians had been anxious to give their services and it had been suggested that those unattached to institutions might arrange to act as temporary substitutes for the men leaving institutional appointments. This was a solution also for the medical men unattached to institutions and too old or physically unfit for active military service. A coöperating subcommittee of the Mayor's Committee for National Defense was making a study of the reserve nursing resources of the city. Women who had received nursing training but were not at present engaged in nursing, would be asked to come into the hospitals to relieve graduate nurses who might go off for service under the Red Cross or in the army.

One of the conservative efforts of the committee had so far failed; this was the effort to secure a bill for exemption from military service for hospital internes until they had finished their service. Internes should be permitted to continue and complete their hospital course for the later protection of the community. The committee's attempt to secure this exemption was begun too late, but of the Senators and Congressmen approached on the subject, two thirds expressed their approval of the proposition and were willing to do what they could to support the committee's effort to secure the desired exemption by executive decree.

The time had not yet arrived for the actual expansion of the hospitals but the committee, looking ahead, had instituted a standardized course of training for nurses' aides in conjunction with the Red Cross. It was proposed to train a large reserve force of volunteers in various hospitals. One hundred and twenty hours intensive practice—training, equivalent to one month, plus thirty hours theoretical work—were included in the accepted course. The training was modeled on that given the nurses' aides enlisted for service with the base hospital units. In each instance the applicant would pledge herself to perform not less than six months hospital service to meet war needs. Should the patients arrive in such numbers that the existing nursing staff was unable to care for them, or should the nurses now on duty in the hospitals be called off so that the nursing staff was depleted, it would be of great assistance to have standing by, women with some training for the simpler nursing duties. Some hospitals so fortunately situated that they could contemplate expansion by building temporary additions were preparing plans to that end. This was a summary of the work that had so far been done by the Committee on Hospital Facilities.

MEDICAL NEWS FROM WASHINGTON.

Health Status of the Navy—Report on Naval Hospital Facilties—Sanitary Precautions in Establishment of Training Stations—Proposed Medical Legislation—Longevity Pay of Medical Officers.

WASHINGTON, D. C., *July 17, 1917.*

Surgeon General Braisted, of the navy, has issued a statement to the effect that the health of the naval service ashore and afloat is excellent. Reports from the fleets and other ships, both at home and abroad, are satisfactory. Measures for the control of certain communicable diseases that were carried to a few of the training stations some time

ago by the rapid expansion of the navy and extensive recruiting among susceptible young men in civil communities where these diseases were abnormally prevalent are progressing desirably and conditions in this respect are approaching the normal. Admission rates have fallen and most of the patients under treatment in naval hospitals are convalescent.

The enlarged division of sanitation is proving to be of great value and many questions of interest already are being handled, such as the elimination of mental defectives at the training stations and the detection and treatment of those affected with animal parasites, as well as germ carriers of various types. All stations are being covered rapidly by close daily sanitary inspections. Great activity is apparent in new construction to care adequately for the present and future expansion of the navy.

Surgeon R. C. Holcomb, of the navy Medical Corps, principal assistant in the office of the surgeon general of the navy, has returned to Washington from a tour of inspection that included the new hospital accommodations at the southern naval stations. He reports everything in fine condition, with the prospect that the facilities for the care of the sick and wounded at the various places will be in readiness to receive patients by September 1st, as planned by the naval medical authorities.

At all the stations the temporary hospitals are of a standard type. At Charleston, S. C., there will be accommodations for 240. At Port Royal, S. C., where enlarged hospital construction was authorized by the act of August 29, 1916, it is necessary to make additional provisions similar to those at Charleston. At Key West, Fla., the new construction is dependent upon the selection of a suitable site. At Pensacola, Fla., a temporary hospital for 240 is under construction. At Gulfport, Miss., where the Navy Department is establishing an entirely new training camp, there is need of special work. At New Orleans, a hospital for 240 is under way. At the larger naval places in other parts of the country, work of providing additional hospital accommodations is under way or is being planned. It is proposed to have hospitals of 1,000 beds each at Boston, New York, Philadelphia, Chicago, Bremerton, Wash., and San Francisco. At most of these places, this is simply an addition of structures of the pavilion type.

In working out the new sanitary system instituted by the surgeon general of the navy and being carried forward with the cooperation of members of the Public Health Service, it has been arranged that at the permanent training stations and the other places where newly enlisted men will be congregated in large numbers for preliminary training there shall be a period at the beginnng of the career of segregation in small groups. This is a precautionary measure against the communication of disease that is a natural consequence of bringing so many people together from all sections of the country. It has been found that the men from the country districts are more liable to ailments of this kind than those from the larger communities, apparently because the latter are more immune to children's diseases, to which class of disability the outbreaks of the navy and marine corps are largely confined. This method of observation and control calls for bacteriological work of a high order, and it is believed that the method will be conducive to the preservation of the health of the navy and marine corps, both at the training stations and on board ship.

A bill has been introduced in Congress providing that there shall be established one additional division each of mental hygiene and rural sanitation in the Public Health Service, in charge of commissioned medical officers of that service, who while thus serving shall be assistant surgeons general. The duties of the division of mental hygiene shall be to study and investigate mental disorders and their causes, care, and prevention. The duties of the division of rural sanitation shall be to investigate improved methods of rural sanitation and the prevention and suppression of communicable diseases.

Senator Owen, of Oklahoma, has introduced a bill defining the duties of the Medical Department of the Army. The bill provides that these duties shall be the initiation and the direction of measures for the prevention of disease among troops and avoidance of sanitary errors in the location, construction, and management of posts and camps; the sanitary, medical, and surgical care of troops, the physical examination of all officers and enlisted men entering or leaving the army; the care of and accountability for all transportation pertaining to the movements of men and materials of the medical department and of the sick and injured of the army; and the reparation and preservation of the records of the transactions taking place as prescribed in the preceding. It also is prescribed that it shall be the duty of the senior medical officer of an army, corps, division, brigade, territorial division or department in which an outbreak of disease occurs to investigate at once and determine the reasons therefor.

The Court of Claims has rendered a decision on the question whether a physician, who while serving as a contract surgeon in the army was appointed a member of the Medical Reserve Corps, is entitled to longevity increase of pay for the time he served as a contract surgeon. An act of 1908 provides that officers of the Medical Reserve Corps, when called to active duty in the service of the United States, shall be subject to the laws, regulations, and orders for the government of the regular army, and during the period of such service shall be entitled to the pay and allowances of first lieutenants of the Medical Corps with increase for length of service now allowed by law, said increase to be computed only for the time of active duty. The court holds that this legislation was prospective in its character and operation and does not contemplate the computation of former service in fixing the longevity pay of officers rendering service in the Medical Reserve Corps; that the plain meaning of the law is that officers of the Medical Reserve Corps shall only receive longevity pay while they are on active duty in the active service of the United States in the Medical Reserve Corps, and that no service performed elsewhere, even though performed in other branches of the military service, can be computed in determining the longevity pay.

Editorial Notes and Comments

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EDITORS
CHARLES E. DE M. SAJOUS, M.D., LL.D., Sc. D.
Philadelphia,
SMITH ELY JELLIFFE, A. M., M. D., Ph. D.,
New York.

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VOLTAIRE AN APOSTLE OF MEDICINE.

The vigor of growth which has preserved medical science in the very front rank of advance has been largely maintained by its many sided contact with all other forms of culture and learning. It has seemed often so intensively occupied with its own problems and internal development as to exclude such interests from its sphere, yet it has swung back again and again, even as at the present time, to a realization of its inseparableness from all forms of human interests and its need to keep in vital touch with every variety of means through which human life finds successful expression or that stoppage of energy in the individual or the group which is sickness.

The following of this broader point of view manifest in the followers of medicine or in their sympathetic contemporaries belongs to the minds of the present day which are thoroughly imbued with this constant interdependence of medicine with all other forms of thought and endeavor. Such an appreciation, therefore, of the advance and support accorded to medical history through the genius of Voltaire comes from the pen of Doctor Bailey, skilled alike in such historical evaluation and literary expression of it. [Pearce Bailey: Voltaire's Relation to Medicine, *Annals of Medical History*, vol. i, No. 1, Spring 1917.]

In the days of Voltaire medicine needed a champion outside its own immediate circle, for medical men of originality and progressive temperament were peculiarly lacking just at that time. The great writer's satire expressed his abhorrence of the unworthy physician and that in medicine which was based on false superstition or lost itself in cumbersome ceremonial or the ignorance and sham which paraded as medical practice and knowledge. Nor did his fun loving nature refrain from making the doctor the subject of jest. Yet the kindly sincerity which was fundamentally his, as well as the keen and wide grasp of medical subjects, proved him a savant in medical subjects, a clear thinker and writer, and also a "loyal admirer and defender" of the worthy members of the profession. His unerring insight, Bailey reminds us, led him straight to the truth hidden among the obscurities of the many medical systems of the times. Numbers of important medical topics are discussed by him with a knowledge and practicality which do credit to a much later stage of scientific research and application. He saw in madness a derangement of the faculty of thinking, a functional misuse of the same faculties with which sane men are endowed and the misinterpretation of the same sensations. It was not an especial divine infliction upon certain minds, but it was possible at any time to any one.

He subjects to a charming vein of satire the very slowly advancing theories in regard to generation, but was himself forced to leave the question to further enlightening studies, which did not until long after his death solve the mystery of fertilization through union of the nuclei of spermatozoon and ovum. The subject of inoculation against smallpox occupied much of his writing. He himself had been a victim in his youth of this universal scourge. It was not until his old age that he had the satisfaction of seeing inoculation become general in France, though it had already made its way in England, Russia, and other nations of Europe and had been introduced into New England. Surgery also occupied his interest and attention. In anatomy, as in his general knowledge of medical terms, there is a surprising accuracy and correctness, while he manifested likewise a clear perception of the place which medicine was destined to occupy. The same insight and courage to depart from accepted opinion and custom reveal them-

selves in his consideration of crime and punishment. He recognized the pathological condition that lay behind the former and also the frequent religious fanaticism associated with it. His constructive view of the reparation to society to be obtained by some other means than the death of a homicide stands yet as an idea in advance of the accepted rule of society.

His extensive writings on the subject of syphilis, "grand pox," as he called it, contain a message which may well be sounded out at this time. If the nations cannot stop now the destruction of warfare to turn attention to this increasing plague, they can at least embody this within their policy of offense and defense. In *L'Homme aux quarante écus* the surgeon says in regard to syphilis: "There is only one way, and that is for all the princes of Europe to form a league, as in the days of Godfrey of Bouillon. A crusade against syphilis would surely be more sensible than those directed in old times against Saladin, Melacsala, and the Albigenses. It would be better to form an agreement for the purpose of stamping out this enemy common to all humanity than to be always busy watching for the right moment to devastate the earth and cover the fields with dead, for the purpose of filching from one's neighbor two or three cities or a few villages. I am speaking against my own interest, for war and the pox make my fortune."

DISTRIBUTION OF THE LEUCOCYTES.

The recent work of Wells on leucemia and hyperleucocytosis is stimulating in that it seems to shed light on the question of the distribution of the leucocytes under different circumstances. The white cells in the peripheral blood have been counted myriads of times, but their distribution among the internal organs and throughout the lesser and systemic circulation has never been accurately described. An adequate understanding of the function of the leucocytes must be based not only on a knowledge of their number and varieties in the peripheral blood, but on the relative and actual number of leucocytes in each part of the body under various conditions.

Lowit early made the observation that the application of moist cold to the surface of the body provoked a leucemia usually followed by a hyperleucocytosis. He erroneously concluded that every increase in the number of white cells was a compensatory new formation of leucocytes and therefore based necessarily on a preceding leucopenia. He is to be credited, nevertheless, with having first drawn attention to a phenomenon of wide occurrence and one which still excites investigation. He first observed that when certain adverse influences are brought to bear on an animal—he worked with rabbits—a reaction occurs characterized by a diminution and then an increase in the number of the leucocytes. He employed particularly lowered temperature to excite this reaction, but also noticed that the mere shackling of rabbits often gave rise to the same phenomenon.

Goldscheid and Jacob then published detailed reports of their painstaking experiments relating to leucocytosis. These authors confirmed Lowit's observations and announced also that the intravenous injection of various protein materials, notably splenic extract and peptone solution, called out the same response as that which Lowit produced by cold, namely, a leucopenia followed after minutes or hours by a hyperleucocytosis. Goldscheid and Jacob, however, found that in many instances the first phase of the reaction, the leucopenia, was omitted, so that a hyperleucocytosis supervened directly or soon after the intravenous injection of the protein material. From this they concluded that the leucopenia and the hyperleucocytosis were two independent and to a certain extent unrelated processes. Moreover, they believed that the promptness of the increase, when it occurred, was strong evidence that the leucocytes were not newly formed for the occasion, but preexistent. In casting about for a reservoir from which to derive these added leucocytes, they chose the bone marrow as the most likely storehouse. These authors also investigated the destiny of leucocytes which disappear within a few minutes after the injection of a foreign protein. In their view, the leucocytes were not destroyed, but were accumulated in some place or places to them unknown, and they suggested the capillaries of the skin as one possible place.

Bearing more directly on the subject of the distribution of the leucocytes was their observation that blood from a large vein, such as the femoral or jugular, contained fewer leucocytes than that from a more peripheral location. This observation was confirmed by Daskalitza Kofman, who made the additional contribution that the number of leucocytes diminishes as the blood travels from the periphery to the heart, so that, of all blood in the body, heart's blood usually contains fewest leucocytes. Widal commented on the peripheral leucopenia which accompanies hemoglobinuria from cold, and advanced the view that the dearth of leucocytes in this condition was due to a transitory storage of leucocytes in the pulmonary capillaries.

Wells, however, seems to have been the first to count the leucocytes in blood taken almost simultaneously from different organs. He worked with rabbits, and caused a readjustment of leucocytes by

the intravenous injection of dead typhoid bacilli. His results, as far as the peripheral blood was concerned, were in accord with observations referred to; that is, a leucopenia promptly followed the injection, and gave way after minutes or hours to a hyperleucocytosis. Of more importance, however, was his novel observation that the blood of certain internal organs contained over fifteen times as many leucocytes as the peripheral blood. Contrary to numerous surmises of past authors, the blood of lung pulp did not contain a strikingly large number of leucocytes. The blood of liver pulp and more especially of splenic pulp apparently contained the greatest number of leucocytes, those of the latter organ in one instance numbering 180,000 per cubic millimetre. The author believes that the highest figures for the internal organs are found during the stage of peripheral leucopenia, but it must be noted that some of his animals showed, before receiving injections, an extremely high leucocyte count in blood taken from the internal organs.

Wells advances the hypothesis that the concentration of leucocytes in the spleen is brought about as a result of the fixation in the spleen of a part of the foreign protein injected. This protein, after fixation in the spleen, exerts a positive chemotactic influence toward the leucocytes. This view appears less plausible when correlated with leucopenia and hyperleucocytosis from causes other than injections of foreign protein. Exposure to cold, for example, as stated in the foregoing paragraphs, gives rise to a sequence of events strikingly similar so far as concerns the leucocytes to that observed after bacterial injections. Does then lowered temperature cause the internal organs to exert a positive chemotaxis? Our present knowledge appears to offer little reason for answering this question in the affirmative. Regardless, however, of the explanation of these facts, a new field has been opened up, and we confidently expect an interesting literature to develop on the subject of the distribution of the leucocytes.

DIFFICULT DIAGNOSTIC POINTS IN TUBERCULOSIS.

Writing in the *Military Surgeon* for June, Colonel George E. Bushnell calls attention to some of the difficulties in the way of the army practitioner in diagnosing tuberculosis. One of the pitfalls is the tendency to make a diagnosis from too slight evidence. Recently several German writers, Meisser, Roepke, Fraenkel, *et al.*, have called attention to the fact that many patients are obliged to give up work and go into a sanatorium when in reality there is no active tuberculosis present, old and quiescent lesions, discovered by percussion only, being mistaken for active ones, or a diagnosis being made on too uncertain or slight indications. Thus Roepke says that ten per cent. of the inmates of tuberculosis sanatoriums are not tuberculous. Often fear of being regarded as a poor diagnostician leads to the calling of a doubtful case tuberculosis.

Bushnell calls attention to one important point in connection with this. In civil life, where a patient is well able to afford rest in a sanatorium or elsewhere and really needs it, a mistaken diagnosis, far from causing real harm, may be productive of good; but the case is different in military service. There duty to one's country requires not only that no tuberculous patients should be enlisted, but also that no nontuberculous persons should be exempted on account of supposed disease. Furthermore, once enlisted, none should be excused from duty on this ground unless he actually has active lesions. The patient's own history should have but little weight in the matter for obvious reasons. The medical examiner should base his diagnosis on physical signs alone.

Bushnell also remarks on many of the difficulties of diagnosis. The apices of the lungs are a debatable ground, the chief question being as to whether or not the diagnosis of incipient tuberculosis can be made by physical signs in the upper lobe before râles are present. Radiographs show that the usual origin is in the hilus, whence the disease extends through the lungs as a peribronchial process and may only become clinically manifest when it reaches the apices. At this point it could hardly be called incipient tuberculosis. Many other points are also stressed by Bushnell, looking at the problem from a military standpoint, such as the significance of râles, the various forms of lesions and their prognostic significance, and the diagnosis by tuberculin and by the physical signs.

One important feature of the tuberculosis problem is the x ray picture, its interpretation from the standpoint of the patient and of the army. Radiology is a comparatively new science and its application is so complicated and expensive that we cannot expect every practitioner to be well versed in it. Among the vast numbers of physicians drafted for the war there will necessarily be thousands who will not be able to form a very definite idea as to the state of things in a patient's lungs by looking at an x ray picture, especially where the results are more or less ambiguous to experts. One fairly common source of error is the supposition that a tubercle can be seen by means of the x ray. This is not the case. We cannot see the tubercle any more than we can see the tubercle bacilli; we only see the results of tubercular inflammation. Müller says: "The

exaggerated expectations once entertained for the x ray illumination have not been fulfilled."

What the x ray does show, according to Bushnell, are the following conditions, which are not causes for rejection: The disease confined to the region of the hilus in the deep lung, extending upward or downward; confined to the base, with a fine line or two extending to the apex, with or without small foci there; clouding of the apex, without marked lines from the hilus; and lines extending toward the shoulder, if confined to the deep lung. Where well marked lines extend towards the shoulder, but are confined to the deep lung, physical examination must determine the question of rejection. Where these lines extend to the superficies and there are widely separated spots or more extensive streaked opacities, the candidates are to be rejected.

This indicates somewhat the complexity of the problem. If x ray pictures can show so many minute variations, each one of which is to be interpreted differently, the same is of course true of the physical examination, the clinical course, and so on. No candidate should be admitted to the army who by reason of developing this disease will become a burden and expense to his country, but on the other hand the country should not in these times be obliged to do without the services of any man who is capable of serving. The country puts the question squarely up to the military surgeon, and patriotism requires him to answer it accurately.

THE CAUSES OF SUDDEN DEATH IN CHILDREN.

Sudden death in children, as in adults, is due to the suppression of the functions of one of the organs essential to life. This cessation of the functions may be due to some lesion of one of the important viscera or to some phenomenon of inhibition reacting upon it arising in distant lesions seated in some other organ. The brain is not absolutely essential for life and its disturbances or lesions only result in death by a secondary action on the heart and lungs, so that there are in reality two principal classes of sudden death: cessation of function of the heart or of the lungs. Sudden death from heart trouble is a death from syncope, that from the lung is by asphyxia. Sudden death from cardiac disturbance may be due to congenital defects—persistency of Botal's foramen—or to lesions of inflammatory origin, such as fatty heart and valvular lesions, particularly of the aorta and, very rarely indeed, aneurysms of this vessel. De la Rue, in 1903, was, however, able to collect fifteen cases of this lesion in children and more recent statistics amount to twenty, eight of the patients dying suddenly. Sudden death in children has also been due to rupture of the aorta from a simple artheromatous patch, pericarditis, and myocarditis, these latter being rarely primary.

Sudden death occurs in bronchitis, capillary bronchitis, and pulmonary congestion, and pulmonary hemoptysis or rapid congestion of the lungs are the origin of rapidly fatal asphyxia. Considerable importance has been attributed by some to purulent generalized bronchitis which frequently assumes the form of latent capillary bronchitis. Besides pleurisy, which rarely results in an unforeseen death, cases of sudden death have been known to occur in pneumonia, although this is most exceptional. Asphyxia may also be produced by occlusion of the bronchial tubes due to essential or symptomatic spasm of the glottis, edema of the glottis, tracheal polypi, foreign bodies coming from without or from within as in cases of rupture of enlarged tracheobronchial lymph nodes into the bronchial tubes. Last, but not least, mention should be made of the thymic isthmus.

Syncope or asphyxia may result from functional disturbances or from lesions in other organs than the heart and respiratory apparatus. The nervous system occupies a very important place in the etiology of sudden death in children. Cerebral hemorrhage and softening and tubercles and tumors of the brain must not be overlooked; nor meningeal lesions such as meningeal hemorrhage of the newly born and acute tuberculous or cerebrospinal meningitis; the neuroses of dentition, epilepsy, chorea, hysteria (?), and certain morbid accidents whose varied nature is as yet not clearly understood, such as convulsions, tetany, and laryngospasm. Gastrointestinal disturbances are also frequently the origin of sudden death in children. Retropharyngeal abscess, cardiotuberculous cirrhoses, infantile cholera, serious forms of gastroenteritis and intestinal hemorrhage are all affections which occasionally terminate in an unforeseen way either from hemorrhage, syncope, or acute asphyxia.

Finally, sudden death may result from interference with the mechanism of the heart or lungs or both combined in general diseases, whether infections or dyscrasic states. Among the exanthemata measles, chickenpox and scarlet fever give rise to hemorrhage, thrombosis of the sinus, and pleural collections; myocarditis and bronchopneumonia following typhoid fever are causes of sudden death. Among the dyscrasias are to be mentioned uremic and diabetic coma, eczema, and hereditary syphilis, sudden death occurring from resulting interstitial pneumonia or myocarditis. Addison's disease and

hemorrhage in the suprarenal bodies are important causes of sudden death in childhood.

Sudden death is frequent in young children; the statistics of West and of Richter adequately prove this. However, up to the age of twelve years, according to Huttenbrenner, children are exposed to the causes of sudden death which are peculiar to young children and babies. Sudden death occurring in a few hours or days after birth is due to meningeal or suprarenal hemorrhage; during the first months of life hypertrophy of the thymus and hereditary syphilis play the most important part, while in later childhood sudden death during convalescence from diphtheria is the most frequent cause.

AN APPEAL IN BEHALF OF BRITISH MEDICAL OFFICERS.

A letter and an appeal from the War Emergency Fund of the Royal Medical Benevolent Fund has just come to the editors, which they acknowledge with a keen sense of the urgency and worthiness of the cause. The War Emergency Fund was "instituted last year to afford assistance to members of our profession who, in consequence of having joined the Army Medical Service, find themselves in temporary difficulties. Many medical men, when called up, had to leave on very short notice, without time to make provision for the continuance and maintenance of their practices during their absence. . . . The appeal is not, and ought not to be, restricted to the medical profession. The public, too, may be rightly called upon to bear its share, and to show by liberal contributions its appreciation of the special services so freely rendered by the medical profession." The appeal is supported by the President of the Royal College of Physicians, the President of the Royal College of Surgeons, the Director General of the Medical Department of the Navy, the Director of the Army Medical Service, Sir William Osler, T. Clifford Allbut, and John Tweedy. The JOURNAL hopes that a generous response from this country will help our brothers in the profession who have sacrificed position and goods in the great world cause. Communications should be addressed to the Honorary Secretary, War Emergency Fund, 11 Chando Street, Cavendish Square, London, W. 1.

News Items

A Quarantine Station in the Philippines.—By order of the President, the island of Cauit, province of Cebu, Philippine Islands, has been set aside for the use of the Quarantine Service and the Marine Hospital Service, and the island is now used as a United States quarantine station.

Army Needs More Surgeons.—Surgeon General Gorgas authorizes the statement that in spite of the numerous responses to the call for surgeons the Medical Corps of the U. S. Army has many vacancies, both in the reserve corps and in the regular service, and he urges the profession in the country's need to fill these vacancies in time to secure training in military surgery and sanitation. Examinations for admission to the regular service are held on the first Monday of every month. Applicants for commissions should apply directly to the Surgeon General.

American Physicians to Treat French Children.—It is reported that a commission of American physicians, headed by Dr. J. P. Sedgwick, professor of pediatrics at the University of Minnesota, will go to France to treat French children who are suffering from shell shock and diseases resulting from lack of care during the war.

Poliomyelitis in New York.—During the month of June, 1917, sixty-six cases of poliomyelitis were reported to the Department of Health in New York city, making a total of 99 cases reported since January 1, 1917. In 1916 the total number of cases reported in June was 380, with a total of 409 cases from January 1 to June 30, 1916.

General Manager of the Red Cross.—Mr. Henry P. Davison, chairman of the War Council of the American Red Cross, has announced the appointment of Mr. Harvey D. Gibson, president of the Liberty National Bank of New York city, as general manager of the Red Cross. Mr. Gibson will serve without compensation, and will devote his whole time in Washington to this work.

Colonel Kean in Command of United States Army Ambulance Sections in France.—Colonel Jefferson R. Kean, Medical Corps, United States Army, has been recalled by the War Department from service in the Red Cross and is to be placed in charge of the 160 United States Army ambulance sections in France. Colonel Kean has organized forty-three base hospital units in this country, five naval base hospitals, eighteen field hospital units, and fifty ambulance companies.

Personal.—Dr. H. Sheridan Baketel, professor of preventive medicine and hygiene in the Long Island College Hospital, Brooklyn, has been promoted to the rank of major in the Medical Officers' Reserve Corps, United States Army. Major Baketel has been stationed at the Medical Supply Depot, New York, for more than a year.

Dr. Simon Flexner, director of the laboratories of the Rockefeller Institute for Medical Research, New York, has been promoted to the rank of major in the Medical Officers' Reserve Corps of the U. S. Army. Doctor Flexner has been active in the work of the corps for the past two years.

Special Training for Medical Men of the Navy.—The Navy Department announces that special courses of instruction for young men of the Medical Corps of the United States Navy to equip them for high grade work along special lines have been instituted in the leading medical colleges of New York, Chicago, and San Francisco. It is also reported that an eight weeks' course of intensive training for naval surgeons was begun on May 20th at Jefferson Medical College, Philadelphia, by six leading physicians of Philadelphia, as follows: Dr. Hobart Amory Hare, Dr. J. Chalmers Da Costa, Dr. Judson Daland, Dr. B. A. Thomas, Dr. W. W. Hawke, and Dr. Maurice Booth Miller.

The Rockefeller Tuberculosis Commission.—Dr. Livingston Farrand, president of the University of Colorado and for ten years executive secretary of the National Association for the Study and Prevention of Tuberculosis, has been made head of a commission which is to be sent abroad by the Rockefeller Foundation's International Health Board to undertake the work of tuberculosis prevention in France. Other members of the commission are Dr. James Alexander Miller, professor of clinical medicine at Columbia University; Mr. Homer Folks, secretary of the State Charities Aid Association; Professor Selskar M. Gunn, of Boston, secretary of the American Public Health Association, and Mr. Herman G. Place, of New York.

Health of Army and Navy Reported Excellent.—According to a report issued by Rear Admiral Braisted, Surgeon General of the Navy, on July 14th, the health of the navy continues good. Reports from the fleets and various vessels operating independently are reassuring. Conditions ashore are generally very satisfactory, and at the larger training stations where the greatest number of recruits are received fresh from their home surroundings such sanitary measures and precautions are in operation as to insure actually greater safety from contagious diseases for a great many of the young men than they could have in their own homes. The Surgeon General of the Army states that the health of all the troops in the Federal service on this continent continues excellent.

Red Cross Policy in the Use of War Relief Funds.—The report which appeared recently in the newspapers that the American Red Cross was to use in Italy $10,000,000 of the $100,000,000 fund recently subscribed is without foundation, according to a statement authorized by Mr. Henry P. Davison, chairman of the Red Cross War Council. The Red Cross has appropriated $1,000,000 to provide immediate necessities in France, to be spent under the direction of the American Red Cross Commission in France headed by Major Grayson M. P. Murphy, a member of the War Council. The Red Cross has also appropriated $200,000 to purchase medical supplies and instruments whereby the Red Cross Commission to Russia may take care of more urgent needs upon arrival in that country. The sum of $200,000 has been appropriated to purchase materials to supply most urgent needs in Roumania. The sum of $100,000 has been appropriated for use in Armenia, and $6,500 has been appropriated to purchase drugs to be sent to the Russian Red Cross. Aside from the foregoing no appropriations have been made by the War Council for work in foreign countries.

California Physicians Organize a War Committee.—Dr. Harry M. Sherman, of San Francisco, is chairman of a State committee organized on July 1st under the authority of the General Medical Board of the National Council of Defense, at Washington, for the purpose of rendering aid to the government in medical and surgical matters during the period of the war. Other members of the committee are: Dr. George H. Kress, of Los Angeles; Dr. J. Henry Barbat, of San Francisco; Dr. Jarvis W. Barlow, of Los Angeles; Colonel Guy E. Edie, of Letterman General Hospital; Dr. T. W. Huntington, of San Francisco; Major William L. Kneedler, of Coronado; Dr. John J. Kyle, of Los Angeles; Dr. E. C. Moore, of Los Angeles; Dr. Henry Parker Newman, of San Diego; Dr. Charles B. Pinkham, of San Francisco; Dr. Saxton Pope, of San Francisco; Dr. Wilbur A. Sawyer, of Sacramento; Dr. Henry H. Sherk, of Pasadena; Dr. Rae E. Smith, of Los Angeles; Dr. Stanley Stillman, of San Francisco; Dr. Ray Wilbur, Stanford University; Dr. Emmet Rixford, of San Francisco. The first work of the committee will be to collect statistical data concerning the doctors of the State, classifying them according to their specialties.

Plans for Emergency Naval Hospitals.—The Secretary of the Navy has submitted a supplemental estimate to Congress of appropriation of $2,200,000 for construction of emergency hospital buildings. The original estimate for this purpose was $3,200,000, but the urgent deficiency appropriation act of June 17, 1917, carries an appropriation therefor of only $1,000,000, the reduction seemingly having been due to the erroneous impression that a portion of the sum originally estimated as being required would be used in making permanent additions to existing naval hospitals. It is true that it originally was contemplated so to employ some of the appropriation, but the idea was abandoned some time ago. Emergency hospital construction now under way and approaching completion at Portsmouth, N. H., Newport, Philadelphia, Norfolk, Charleston, S. C., Pensacola, New Orleans, and Great Lakes, Ill., will cost nearly $1,000,000, without equipment, and therefore exhaust the appropriation made available by the deficiency appropriation act. Additional funds are necessary for temporary emergency hospital buildings, plans for which are nearing completion, at New York, Annapolis, Quantico, Va., Key West, Great Lakes, Mare Island, Cal., and Bremerton, Wash., which will cost about $1,800,000, and also for constructing further additional buildings at Portsmouth, N. H., Newport, and Norfolk, which will cost several hundred thousand dollars more. All of the buildings mentioned as under way or contemplated are of an emergency type of construction and of a temporary character. Wherever recruit camps, convalescent camps, etc., are established for the navy and marine corps, temporary hospital buildings must of necessity also be established and equipped for the care of the sick and injured, and these buildings, though temporary, must be provided with heat, light, kitchens, mess halls, operating rooms, water and sewer connections, heating plants, and quarters for the medical staff, nurses, and hospital corps men.

Medical Officers Ordered on Laboratory Duty.—The following named officers of the Medical Reserve Corps are assigned to active duty and will proceed to New York, N. Y., and report in person to Major Simon Flexner, Rockefeller Institute for Medical Research, New York, for a course of instruction in laboratory work: First Lieutenants Donald J. MacPherson, Theodore W. Kemmerer, William L. Aycock, Charles H. Bailey, Homer L. Conner, Baxter L. Crawford, Ulysses G. Goodwin, George R. Moffitt, Charles B. Reitz, Stephen H. Curtis.

The following named officers of the Medical Reserve Corps are relieved from duty at Fort Benjamin Harrison, Ind., and will proceed to New York, N. Y., and report to Major Flexner: Captain Howard L. Van Winkle, First Lieutenant H. R. Wahl, and First Lieutenant G. L. Schadt.

First Lieutenant Frederic H. Thorne, Medical Reserve Corps, is relieved from duty at Fort Oglethorpe, Ga., and will proceed to New York and report to Major Flexner.

The Rockefeller War Hospital.—The hospital established by the Rockefeller Institute for Medical Research for the purpose of demonstrating the most advanced methods in war surgery was opened for inspection on Saturday, July 14th. There are fifteen long, narrow, single story, unpainted wooden buildings situated in the grounds of the institute at Sixty-fourth Street and Avenue A, and to almost the last detail they are reproductions of the buildings comprising the English base hospital at Etaples, France, except that instead of holding 500 beds, as the Etaples Hospital does, in this war demonstration hospital there are only two wards of twenty-four beds each. The buildings are arranged in the form of a square, with the receiving, operating, and double wards in the centre.

Within probably two weeks the hospital will be completely finished and equipped, the staff doctors and nurses ready, the first group of patients received, and treatment begun before the first group of army and Red Cross surgeons. Every few weeks new classes of surgeons will be admitted to the hospital and trained in the Carrel-Dakin method of sterilization.

Dr. Alexis Carrel returned from France a short time ago to take charge of the hospital, and will demonstrate to American war surgeons the Carrel-Dakin method of treatment of wound infection, along with other surgical methods worked out and successfully applied at the military hospital at Compiegne, France.

Promotions in the Navy Medical Corps.—Promotions of naval medical officers, due to expansion of the personnel, have been announced. Advancements of officers of the naval staff corps will be by seniority, with the possible exception of officers that are to attain the rank of rear admiral, of whom there are two in the Medical Corps. If seniority prevails, those to be advanced to the grade of rear admiral are Medical Directors William R. Du Bose and James D. Gatewood, who now have the rank of captain. Medical Inspectors Luther L. von Wedekind, Edward S. Bogert, and Leckinski W. Spratling, with the rank of commander, will be advanced to medical directors with the rank of captain. Surgeons Edgar Thompson, John B. Dennis, Eugene J. Grow, Joseph C. Thompson, Frederick L. Benton, Will M. Garton, Frank E. McCullough, Francis M. Furlong, Ralph T. Orvis, Granville L. Angeny, William H. Bell, Holton C. Curl, Richmond C. Holcomb, Edward G. Parker, Barton L. Wright, Henry E. Odell, James S. Taylor, and Joseph A. Murphy, with the rank of lieutenant commander, will be promoted to medical inspectors, with the rank of commander.

The following named passed assistant surgeons, now having the rank of lieutenant, will be advanced in that grade to the rank of lieutenant commander: Herbert L. Kelley, Julian T. Miller, George B. Trible, Harry A. Garrison, Henry L. Dollard, Earle P. Huff, Harry R. Hermesch, Harry L. Smith, Willard G. Steadman, Jr., Martin Donelson, Myron C. Baker, Elmer E. Curtis, Dow H. Casto, Charles W. O. Bunker, Howard F. Lawrence, Charles J. Holeman, Gordon D. Hale, Alexander B. Hayward, Montgomery E. Higgins, George W. Shepard, Ernest W. Brown, Dallas G. Sutton, Lawrence M. Schmidt, Charles L. Moran, William Chambers, Sankey Bacon, Frank P. W. Hough, Kent C. Melhorn, Lee W. McGuire, Joseph A. Biello, George C. Rhoades, Alfred J. Toulon, and Harry H. Lane.

THE USE OF INEXPENSIVE DRUGS IN PRACTICE.

By Louis T. de M. Sajous, B. S., M. D.
Philadelphia.

Some of the relative advantages and disadvantages of suprarenal products and of ergot, respectively, as vasoconstrictor agents have been compared, and the conclusion reached that it is inadvisable as a rule to substitute the latter for the former, in spite of its somewhat lower cost. There is one possible disadvantage of suprarenal products, however, which I am inclined to believe deserves to be borne in mind.

As is well known, epinephrin even in minute amounts exerts an inhibitory action on the normal movements of the intestine. When a strip of fresh intestinal muscle is excised and suspended in warm Tyrode's solution through which oxygen is kept bubbling, i. e., placed under such conditions as will maintain peristaltic contractions of the intestinal strip for an indefinite period, the addition of epinephrin to the menstruum in the ratio of one in 30,000,000 or even less causes arrest of these movements. This effect, which is one of the most salient features of the action of epinephrin in experimental studies, constitutes an example of the sympatheticomimetic tendencies of this drug, the sympathetic system, when excited, itself causing inhibition in the greater part of the intestinal muscular tissues. On the other hand, the sympathetic distributes motor fibres to certain special portions of the intestinal muscle, viz., the pylorus and the ileocolic and internal anal sphincters, and these tissues, it has been held, are caused to contract or thrown into spasm by epinephrin. From clinical observation I have gained a distinct impression that upon oral use of adrenal substance a constipating action is at times exerted. As mentioned in the last installment, many clinical observers have recently seen good reason to overthrow the view hitherto held that adrenal products have no action when taken by mouth, and there seems no reason why, even if no part of the epinephrin contained in adrenal substance orally administered should reach the lower alimentary tract, some inhibitory action on the intestine should not occur after absorption, since general effects on the circulation produced in this manner are no longer considered impossible. Again, as Sollmann states, the distal portions of the intestine are more susceptible to relaxation by epinephrin than the proximal end—a circumstance which seemingly would favor arrest of motility in the lower bowel rather than in the duodenum and jejunum. In 1912, Hoskins and McClure pointed out that extremely dilute solutions of epinephrin, instead of inhibiting the contractions of an intestinal strip, increase them. A like observation was made in regard to the blood pressure, very minute amounts of epinephrin, when injected in the femoral vein, causing a slight drop in blood pressure instead of a rise. The same experimenters found, however, that doses of epinephrin inadequate to raise blood pressure sufficed to bring intestinal peristalsis to a complete standstill. Therefore, doses of adrenal product, taken orally, which in a given case suffice to exert a decided stimulant effect on the vascular tree, should besides tend to impede intestinal motility. Comparing ergot with epinephrin, we note that the former differs strikingly from the latter in its action on the intestines. Injection of ergot or ergotoxine has been found to cause a marked increase in peristalsis throughout the alimentary tract, and histamine, another of the ergot principles, is individually known to cause an intense stimulation of the intestines (Sollmann). Cramps and diarrhea are recognized symptoms of acute ergot poisoning.

Thus in at least this one respect adrenal products and epinephrin would seem disadvantageous as vasoconstrictor agents, as compared to ergot. The tendency of the former drugs to interfere with intestinal motility might at times render their use undesirable, at least where a continuous action on the vessels is to be exerted. Were ergot substituted, the expense of the medication would, of course, be lessened. As already pointed out, however, uncertainty of blood pressure raising action is a decided drawback in the case of ergot. The same observation applies to the actions of the two drugs on the heart, epinephrin exerting a very definite stimulating action on this organ, while in the case of ergot the action seemingly parallels, as a rule, that produced on the vessels.

One other possible indication for ergot suggesting comparison with adrenal products is that of local dilatations or ruptures of vessels requiring treatment by a general rather than a local remedy. Until recently ergot has maintained a fair reputation as a therapeutic agent in gastrointestinal and certain forms of internal hemorrhage, and in such local congestive conditions as hyperemia of the cerebral or spinal meninges, some forms of insomnia, night sweats due to peripheral vascular relaxation, pulmonary hyperemia, and even acute rosacea, incipient varicose veins, etc. More critical observation has, however, resulted in the realization that these therapeutic actions are in most instances very uncertain and in many of the remainder, entirely illusory. Especially does this apply in the treatment of hemorrhage—excluding that of uterine origin. In hematuria good results are seemingly at times obtained, but in most other forms of hemorrhage the effects of local vasoconstriction, if such vasoconstriction occurs, are counterbalanced by a tendency to general rise in blood pressure. The action of ergot in local vascular dilatations is perhaps deserving of greater confidence. The constricting effect of the drug on small peripheral vessels is demonstrable experimentally; but here again, there is no especial assurance that the vessels in the affected area will be those upon which the drug will exert an action predominant over that

produced on the remaining vessels of the body. Clinical and experimental observations show that ergot gangrene "always begins in those situations in which the circulation is weakest" (Sollmann). According to this, one might not expect ergot to exert its greatest local effect in an area in which hyperemia already existed, unless this hyperemia were of a distinctly passive type, with actual slowing of the circulation in the area. Apparently, then, the uncertainty attending the action of ergot on the blood pressure may be held to prevail also in relation to its action in local vascular dilatations.

In the case of adrenal products there is as yet little or no evidence that by systemic administration a preponderant local vasoconstrictor effect can be obtained. Possibly the observation of Ogawa, 1912, in perfusion experiments that there is a greater tendency to contraction under epinephrin in the case of relaxed vessels than in that of vessels with good tone will be found to have a clinical bearing upon further trial of adrenal products. On the whole, however, experiences with ergot in this direction must be said to have proved so far the more satisfactory, in spite of the general uncertainty attending the effects of this drug; and in the treatment of localized vasodilatations by the systemic rather than the local route, ergot finds another of its preferential indications over epinephrin with the added advantage of diminished expense.

(*To be continued.*)

Hypertrophic Pyloric Stenosis in Infants.—L. Emmett Holt (*Journal A. M. A.*, May 26, 1917) reviews his observations in 141 cases and points out that this condition is primarily one of anatomic, congenital hypertrophy of the musculature about the pyloric sphincter, to which spasm is subsequently added. In the very mild forms of the affection medical treatment with frequent gastric lavage with water at 112° F. and the careful feeding of frequent very small amounts of breast milk or of properly modified cow's milk may lead to recovery. In every case with marked wasting this should be combined with the daily administration by hypodermoclysis of 150 to 250 mils of four per cent. dextrose in normal saline solution. In all other cases there should be prompt surgical interference, the only operation giving satisfactory results with a maximum of safety being the external complete division of the pyloric musculature by the method first used by Rammstedt. Quite as important as the operation is the aftertreatment. This should be begun with careful feedings as soon as the child has recovered from the anesthetic. Stimulants should be given at the time of the operation, or at once thereafter, the best being one in 1,000 epinephrin solution in doses of 0.2 to 0.3 mil, hypodermoclysis with 120 to 240 mils of normal saline, and adequate external warmth. The food should be begun in very small amounts—two or three teaspoonfuls of breast milk with one or two of water—and given with a medicine dropper. A teaspoonful of castor oil should be given at the end of twenty-four hours. The mortality under surgical treatment is about twenty-three per cent. as against about fifty per cent. under medical treatment.

Treatment of Diabetes Mellitus.—R. T. Williamson (*Lancet*, April 28, 1917) recommends the following plan for cases which are not complicated and are free from marked acidosis. The first diet to be given is a rigid diabetic diet with the addition of ninety grams of white bread daily. This is called Diet I. If this does not soon control the glycosuria, Diet II should be given. This diet differs from the former only in the replacement of the white bread with some starch free diabetic bread. If in turn this fails, then Diet III should be given for one week. This includes feeding at two hour intervals from 8 a. m. to 10 p. m., the total day's food being made up of three or four eggs, sixty to ninety mils of cream, a litre of milk and tea, coffee, or beef tea. The eggs and milk may be made into unsweetened custards, if desired, and some of the cream can be given in the beef tea as well as in the tea or coffee. Finally, if this diet does not check the glycosuria, Diet IV should be tried, consisting of a glass of casein or biogene and cream with water every two hours for seven to ten days. Twice a day a cup of tea or beef tea may be given if the patient wishes it. The mixture of casein, cream, and water is prepared by mixing one tablespoonful each of casein and cream and then adding hot water carefully until the tumbler is filled. It may be sweetened with saccharin and flavored with nutmeg. Two tablespoonfuls of biogene may be used in place of the one of casein. If it is desired to avoid the use of diabetic breads, which are costly, Diet II may be omitted if Diet I fails and Diet III can be tried at once. Diet III is of great service, as it is palatable, can be taken by nearly all patients, and is not very expensive. After the urine has been freed of sugar for a week to ten days the ordinary rigid diabetic diet may be tried. In the more severe cases after a week or ten days of Diets III or IV with the urine still containing sugar, Diet II should be given. If the glycosuria has been checked, then two ponos biscuits are allowed each day, added to Diet III or IV, and later bacon, green vegetables, and custard are allowed at 1 p. m. to replace the meals at 12 and 2 p. m., and then Diet V is given. Diet V may also be used if all the diets suggested have failed to check the glycosuria, and this can thus be reduced in many cases. Diet V includes breakfast of coffee or tea, cream, eggs, or tomatoes or mushrooms, diabetic bread and butter; dinner of bacon, and one of the following vegetables: cabbage, cauliflower, Brussels sprouts, turnips, French beans, spinach, broccoli, boiled walnuts, asparagus, vegetable marrow, tomatoes, mushrooms, lettuce, cucumber, watercress, celery, radishes; custard, diabetic bread; supper of tea with cream, eggs or Welsh rarebit or cheese, one of the salads, lettuce, cucumber, mushroom, tomatoes, spinach, and suitable diabetic bread and butter. If all of these diets fail to check the glycosuria, sodium salicylate or aspirine should be tried in addition, giving about three grams of either daily. In some cases quinine salicylate in doses of about 0.2 gram three times a day is helpful. Fast days are also of some service, only tea, coffee, beef tea or whisky and soda being allowed. Even if these diets will not check the glycosuria, they are helpful in reducing its severity and holding it at a reduced level.

Polyvalent Staphylococcus Vaccine in Follicular Dermatitis—P. F. Arullani (*Gazzetta degli Ospedali e delle cliniche,* March 4, 1917) describes two cases of the somewhat rare condition of general pustular folliculitis variously named after Colles, Graves, and Jaccoud as due to the staphylococcus and the lowered resistance of the individual thereto. In both cases remarkable and continued improvement followed the administration of polyvalent staphylococcus vaccine in progressively increasing doses, the site of injection being by preference the lateral abdominal and glutcal regions.

Tuberculous Adenitis.—John B. Hawes (*Interstate Medical Journal,* March, 1917) describes his treatment as carried out at the Massachusetts General Hospital. It consists of four factors: 1, the removal of all sources of infection, with x ray examination of the teeth if necessary and removal of diseased tonsils and adenoids; 2, the surgical treatment, operative or otherwise; 3, general hygienic measures such as outdoor sleeping, heliotheray, nourishing food, and cool sponge baths down to the waist every morning; and in Hawes's opinion the least important, 4, the use of tuberculin, which should not be administered by the general practitioner, but by those skilled in its administration.

Mixed and Secondary Infections in Pulmonary Tuberculosis.—Roswell T. Pettit (*Interstate Medical Journal,* March, 1917) divides the treatment in symptomatic and direct methods. As to the first, fever is best treated by rest in bed without medication unless the temperature reaches 102° F.; sweats are controlled by rest in bed and atropine, and profuse expectoration is best left alone. Direct methods are those of chemical therapy and of immunization. Chemical treatment includes the use of antiseptics and of drugs which produce leucocytosis. Of the antiseptics creosote or creosotal in doses of three to five minims three times daily may be tried for several weeks, while nuclein and cinnamic acid are used by some to increase leucocytosis, although very unreliable in their action. Indirect immunization by serums is unsatisfactory, and even the active method by vaccines—autogenous or stock—shows varied results.

Medical Treatment of Chronic Intestinal Stasis.—William Van V. Hayes (*Interstate Medical Journal,* March, 1917) advises a proper abdominal support to maintain in position the digestive viscera; and the regulation of the bowels by non-irritating methods such as massage, special exercises, a glass of water before each meal and at bedtime, and liquid petrolatum half to one ounce morning and night or before each meal. Agar-agar, cascara, and phenolphthalein may be given and in suitable cases salines before breakfast. Large amounts of medicine are undesirable, and should be administered only after studying the secretory and motor functions by test meals. Proteins, fats, and sweets should be restricted, the urine kept free from indican, and the stools free from bad odors. Outdoor life, systematic exercise, general massage, and hydrotherapy should be encouraged, as well as all other measures which will improve the nerve tone and muscular vigor of the patient.

New Treatment of Bronchial Asthma.—A. G. Auld (*British Medical Journal,* May 5, 1917) holds that bronchial asthma is due to an anaphylactic condition arising from autosensitization. Since a more or less general antianaphylaxis can be produced by the injection of peptone, this was tried in cases of asthma with surprisingly favorable results. The treatment recommended is to use an aqueous solution of peptone and inject it subcutaneously. The initial dose should be 0.33 gram in five mils of distilled water. This is repeated in three or four days. During the second and third weeks the dose is doubled and later two doses of one gram each in seven to ten mils of distilled water are given. Severe cases may require a gram once or twice weekly for several weeks.

Ether Hypnosis in Psychotherapy.—Frank R. Starkey (*Medical Record,* April 14, 1917) has used ether hypnosis for several years in selected cases as a therapeutic measure and is impressed by its value. The gastrointestinal tract is prepared by a gentle purge and a light, easily digested diet for twenty-four hours in advance, with a mild sedative such as sodium bromide to calm any nervousness present. The ether is administered in a darkened, quiet room, and as soon as the patient has relaxed, and while the mental condition is hazy and dazed the operator begins his psychotherapy by impressing on the subject's mind the idea that his agitation, fear, rigidity, or other symptom has passed away, and he should be encouraged to repeat the principal statement, such as "quiet," "relaxed," several times over. The whole procedure does not occupy more than ten minutes and may be repeated daily or as often as necessary. Afterward the patient should be removed without noise or agitation to a quiet, darkened room and isolated there on soft or liquid diet in liberal quantities and protected from noise or disturbance of any kind.

Treatment of Pelvic Varicocele.—Carlos A. Castaño (*Revista de la Associacion medica Argentina,* March, 1917) divides the treatment into medical and surgical. As to medical treatment he advises the prolonged trial of thyroid extract in doses of from thirty to sixty centigrams daily with the addition of iodine, sulphur, calcium, and phosphorus which are found in the normal thyroid. The diet should receive careful attention, with the exclusion of meats, condiments, alcohol, jams, sea food, and coffee. Green vegetables should be freely given together with cereals of all kinds and fruits to prevent intestinal stasis. Rest, mental, physical, and sexual, should be taken and the skin should be stimulated by warm baths and friction with alcohol or aromatic vinegar. Saline laxatives or castor oil in small doses should be given to encourage gentle purgation without causing pelvic congestion. Hamamelis, viburnum, and cannabis indica may be profitably administered as may also be hydrastis. Hemorrhages may be controlled by enemas of plain hot water to which may be added gelatin or laudanum; by vaginal packing, or by rectal suppositories containing belladonna and cannabis indica. Surgical measures are ligature of the veins by laparotomy after the methods of Seucert or Reed or by oophorosalpingectomy or hysterectomy.

Cerebrospinal Fever. — Robert Donaldson (*Practitioner*, May, 1917) is of the opinion that early and repeated lumbar puncture in the absence of a serum of known curative value, is of more importance than any other method of treatment. The beneficial effects of simple lumbar puncture, apart from mere relief pressure, are, he thinks, due to the mechanical flushing action which must occur in the cerebrospinal system when a large quantity of cerebrospinal fluid is suddenly removed. The flushing must bring fresh bactericidal substances and fresh leucocytes to replace the exhausted contents of the thecal sheath.

Nonsurgical Treatment of Urethral Strictures. —Saul Steiner (*Medical Record*, April 21, 1917) states that cutting of strictures is practised very little at present as it is very rare to meet a stricture which is not dilatable except when due to traumatism. In strictures of small calibre a filiform bougie is passed into the bladder and allowed to remain there for twenty-four hours, when a soft bougie can be introduced. Bougies are passed up to 24 French every three or four days and then the metal sounds are resorted to. Other methods to be considered are electrolysis and the hypodermic or intramuscular use of fibrolysin.

Intravenous Administration of Cyanide of Mercury in Dysentery.—D. Varsi (*Revista de la Associacion medica Argentina*, March, 1917) has used the intravenous method of giving cyanide of mercury for two years in the treatment of both amebic and bacillary types of dysentery. This treatment was used alone in some cases, while in others the usual measures were resorted to in order to relieve pain. The initial dose is one centigram and if this is well tolerated one centigram and a half is given on the following day and repeated on the third day. If there is not a marked improvement on the fourth day two centigrams are given, but it is rare to find this fourth dose to be necessary. It is important that an accurate diagnosis be made, as there are a great number of cases of enterocolitis which are not benefited by the treatment, although many other conditions are greatly helped, such as tuberculous colitis, chronic ulcerative processes, and relapsing proctitis due to prolapse and tumors.

Intramuscular Versus Intrathecal Injections of Tetanus Antitoxin.—David Bruce (*Lancet*, May 5, 1917) criticizes the recent advocacy of the intramuscular route for administration of tetanus antitoxin on the ground that its advantages over the intrathecal route are not borne out by the results in human cases and that all theoretical considerations support the latter as the best mode of administration. In support of this criticism he cites the results of a series of animal experiments, conducted to answer the question in hand, by Professor Sherrington. These experiments were made to reproduce the conditions encountered in the human disease as nearly as possible and proved conclusively the much greater therapeutical value of intrathecal injections as compared with intramuscular. The former route not only gave far more effective protection against fatal progress of the induced tetanus, but also gave protection with much smaller doses of the antitoxin.

The Surgical Treatment of Cancer of the Stomach.—J. H. Jacobson (*Ohio State Journal of Medicine*, June, 1917) summarizes the treatment as follows: Successful treatment or cure is dependent upon early diagnosis. Not all cases of cancer show the same degree of malignancy; some are more suitable for operation than others. Most of the patients who come to the surgeon now have palliative or exploratory operations performed. Following resections, lasting cures over five years are obtained in 5.42 per cent. of cases. This will increase when the patients are operated on earlier.

Phenol Injections in the Treatment of Hemorrhoids.—Edmundo Escomel (*Revista de la Associacion medica Argentina*, March, 1917) advocates this method in cases where loss of time is impossible to the patient. It may be applied to external hemorrhoids, but it is painful and is adapted more especially to internal varicosities. After a preliminary purgative and enema the patient is given one centigram of extract of opium every two hours for several doses before the time of operation. The preparation used is twenty per cent. phenol in a mixture of equal parts of water and glycerin, and of this two to six drops are injected according to the size of the hemorrhoid. The position of the patient during the injection is by choice the knee chest one, as in this way the weight of the abdominal viscera is removed from the lower bowel.

Treatment of Acne.—R. A. McDonnell (*Journal of Cutaneous Diseases*, February, 1917) states that acne vulgaris is caused principally by two factors: eating fermentable foods, and inability to prevent such foods from fermenting. Menstruation, cigarette smoking, anemia, etc., are factors in acne through their influence on digestion. The treatment consists in thorough mastication of the food, putting the teeth in good order, and excluding starches and sugar from the diet. Antifermentive drugs, such as aloin 0.1 gram, ichthyol 10 grams, liquorice powder q. s., to be mixed and divided into thirty capsules and one taken after meal, are of value. Sunlight and fresh air as well as exercise help a great deal. X ray works in much the same way. Drying and peeling lotions help locally. Vaccination often controls the formation of pus in the lesions, but cannot, in the opinion of the author, cure acne vulgaris.

Local Analgesia in the Cure of Abdominal Hernia.—J. H. Jacobson (*Interstate Medical Journal*, March, 1917) having operated in 215 cases of hernia under local anesthesia without a death considers that all forms of hernia can be safely and painlessly operated by this method. Novocaine has become the standard drug for this work and it is used in solutions of 0.5, one, and 1.5 per cent., always in combination with adrenalin in the proportion of three drops of the one to 1,000 solution to each ounce of the anesthetic solution. No cases of poisoning or death from novocaine are on record, and it can be used in large quantities, Jacobson having used as much as twelve ounces of the 0.5 per cent. solution in bilateral hernia. A most important rule in the technic is the observance of a wait of at least fifteen minutes after the injection before beginning the operation.

Miscellany from Home and Foreign Journals

Orthostatic Symptoms in Gastric Pathology.—G. Leven (*Paris médical*, April 28, 1917) lays stress, with x ray studies as basis, on certain orthostatic symptoms noticed in men in active military service and apparently always related to gastric dilatation and gastroptosis. These symptoms include tachycardia, diminution of blood pressure, hyperesthesia of the solar plexus, albuminuria, facial pallor and lassitude, mydriasis, etc., all of which disappear when the subject lies down or is provided with a supporting belt so designed and placed as to hold up the dependent portion of the stomach. Prével is quoted in connection with this on the relationship of a prominence of the abdomen below the umbilicus with an unusually marked abdominocardiac reflex. As a matter of fact, this abdominal conformation is regularly met with in cases of visceroptosis. The symptoms mentioned appear due simply to the irritation of the solar plexus which results from the dragging of the dilated and ptotic stomach. The mere presence of such orthostatic symptoms warrants in some degree an *a priori* diagnosis of gastric ptosis and dilatation. The frequency of unexplained and untreated tachycardia in the army is accounted for in this way, as is also a special variety of albuminuria. Relief following application of the appropriate remedial measure is often little short of disconcerting in its promptness and permanence.

Reactivation of the Wassermann Reaction by Injections of Mercury and Sulphur.—A. Bergeron and C. Jouffray (*Presse médicale*, April 26, 1917) point out that, for "reactivating" a negative or doubtful Wassermann reaction in the presence of syphilis, the antisyphilitic measures applied must be neither too powerful nor too weak. Injections of mercury constitute the best procedure for this purpose. The authors employ intramuscular injections of colloidal mercury, in conjunction with sulphur—the latter used because of its tendency, noticed at sulphur springs, to cause reactivation of syphilitic lesions where these have become resistant to mercury, and in long standing, apparently cured, cases of syphilis. Thus, in previously untreated cases of suspected syphilis with negative or weak Wassermann reaction, 0.25 milligram of sulphur and one milligram of colloidal mercury, combined in one c. c. of fluid, are injected intramuscularly, and the injection repeated three days later. After this three double doses of each agent are injected, again at three day intervals, and two weeks later, a Wassermann test is made. In case reactivation has not yet taken place, subsequent tests are made two weeks and three weeks after the first, respectively. If these are still negative, syphilis presumably does not exist in the subject under examination. In five cases with manifestly syphilitic chancre, secondary eruptions, tibial gummata, iritis, and even general paralysis, but with weakly positive Wassermann, the reactivation treatment resulted uniformly in a strongly positive Wassermann. The same result was noted in fifteen feebly positive cases of liver enlargement, nephritis, hemiplegia, nontuberculous lung lesions, cardiac or vascular affections, or chronic rheumatism—thus all shown to have been syphilitic in origin—and in sixteen additional cases with a negative or merely suspicious Wassermann, sometimes both in the blood and cerebrospinal fluid, including instances of bronchiectasis, uterine neoplasm, inveterate headache, rhinitis, glaucoma, etc. If there is delay in the reactivation, the treatment should not be continued beyond the limits already indicated, lest it be sufficient in itself to cause abolition of an otherwise positive Wassermann. In a few cases the reactivation procedure seemed to fail, doubtless either because of actual absence of syphilis, preceding cure of the disease, or unexpected therapeutic activity of the agents given.

Diagnosis of Tuberculosis and Concealed Pulmonary Lesions.—F. S. Bissell (*St. Paul Medical Journal*, April, 1917) states his conviction, after examination of about two thousand lung cases, that the x rays offer more conclusive diagnostic evidence in early tuberculosis than any other procedure. He places the tuberculin test second, the physical signs third, and the history, especially as regards exposure to infection, fourth. The disease presents many clinical and several x ray types. In the numerous cases of latent or concealed tuberculosis, usually classed as neurasthenia or malnutrition, with slow progression and "healing out" in one lung area as the disease passes on to attack another, a solidly based diagnosis is possible only with the x rays. Pathognomonic x ray indications of tuberculosis are a soft, indistinct mottling at the periphery of the upper lobe, with pinpoint to pinhead sized shadows, and a fine network of linear shadows, especially characteristic when it occurs in that part of the lung where all markings are normally absent. Usually these shadows connect with similar ones at the hilus, and often there is a chain extending along the vertebral bronchus into the apex; these shadows, however, seem to occur in other infectious processes. In the differential diagnosis such conditions as anthracosis, streptococcosis, chronic passive congestion, lung syphilis, and bronchiectasis require consideration. Extension to the periphery and apex, when marked, favors tuberculosis. In chronic passive congestion the history and other clinical evidences are of assistance, as also in diffuse bronchiectasis. Especially within the province of the x rays is the negative diagnosis of lung tuberculosis, through which haunting fears of the disease can be definitely allayed. In prognosis the rays are likewise of unique value. Often a single examination will determine whether the disease is of the latent or concealed type, of the slow, infiltrative type with many old calcified foci, or of the more rapid caseating type with early cavity formation. By such a determination the important question of an appropriate mode of treatment is immediately settled; many patients can be permitted to continue their vocation, with proper diet, exercise, rest, and tuberculous therapy, while others must at once be placed in a sanitarium.

Hemeralopia in the Trenches.—Aubaret (*Bulletin de l'Académie de médicine,* April 24, 1917) establishes a distinction between the numerous cases of false hemeralopia, in which poor vision at night results from defects of the cornea, lesions of the humors, or errors of refraction, and the less numerous instances of true hemeralopia, which may be due to insufficient adaptation to obscurity of either the pupil, the retina, or the brain centres. Instances of simulated hemeralopia have also been met with. In the pupillary form of true hemeralopia, the pupils remain contracted in the dark and the retina fails to receive sufficient light. The diagnosis of the retinal and cerebral forms is made by exclusion, no anatomic or other physiological disturbance existing. There are occasional mixed cases in which the pupillary, retinal, and cerebral factors are simultaneously operative. Among the general causes of the nocturnal amblyopia are physical and mental overexertion and the nervous depression resulting from prolonged life in the trenches. Some perfectly well individuals, however, also exhibit the condition. In all instances the first thought should be of a possible refractive error; complete correction of such a condition usually removes the hemeralopia. In true hemeralopia due to myosis, a course of atropine should be given; in the retinal or cerebral cases, strongly smoked glasses should be worn in the daytime. An effort should always be made to improve the subject's general condition, as by rest, tonics, and a diet which favors elimination of toxic wastes from the system.

Physiology and Pathology of the Stomach after Gastroenterostomy.—Abraham O. Wilensky and Burrill B. Crohn (*American Journal of the Medical Sciences,* June, 1917) deduce from elaborate studies that views as to the events that take place after operative procedures on the stomach must be revised. The general impression that gastrojejunostomy does not impair the functional efficiency of the stomach is erroneous; the organ is left definitely impaired in a large percentage of the cases. The creation of a new opening in a situation not intended by nature disturbs the peristaltic tone of the stomach, the secretory function, and the nervous mechanism controlling both. In only a minority of the cases does the stomach return to an approximately normal state of functional activity. How important a factor artificial pyloric exclusion is in this disturbance is uncertain. The best results after operation have been obtained in cases in which some pathological process has gradually caused a stenosis at the pylorus, where conditions have been prepared over a period of time for the proper functioning of an artificial stoma, and when made it acts immediately as a long sought for and much needed outlet. The sudden, artificial attempt to imitate this causes an incoordinate muscular activity and is perhaps responsible for at least part of the disturbances after such operations. Cases in which no definite organic lesion is demonstrable in the stomach at operation, as well as all doubtful cases, should be treated by the physician, who may by diligence preserve the patient from some of the unpleasant sequelæ which can readily follow even a well justified operation.

Yaws.—J. de Aguiar Pupo (*Annaes Paulistas de medicina e cirurgia,* January, 1917), from a study of the literature and from personal observations in Brazil, concludes that yaws is clinically and microbiologically identical with Framboesia tropica, and that it disappears in a community as the hygienic conditions therein improve. Treatment with salvarsan and neosalvarsan has given admirable results in Brazil.

Clinical Significance of Hematuria.—H. W. E. Walther (*Medical Record,* May 19, 1917) has personally collected a series of seventy-eight cases of hematuria in which there was a new growth in the genitourinary tract in fifty-one per cent., and of these new growths seventy-two per cent. were malignant. The next most frequent causes were urinary calculi and renal tuberculosis. The frequent occurrence of painless hematuria in new growths of the urinary tract emphasizes the importance of subjecting such cases to a careful cystoscopic examination to exclude this possibility.

Diagnosis of Atypical Forms of Cerebrospinal Meningitis.—Andruetto (*Gazzetta degli ospedale e delle cliniche,* April 5, 1917), in reporting several atypical cases seen in the Italian military service in which the diagnosis was made only after lumbar puncture, advises that watch be kept for such cases which frequently begin with symptoms referred to the gastrointestinal tract. It is most important in the diagnosis of meningitis that the cerebrospinal fluid be obtained by lumbar puncture and examined for physical and chemical alterations from the normal, the presence and nature of cellular elements and of pathogenic bacteria and for biological reactions. Such examinations should be combined with an intelligent interpretation of symptoms.

Bacteriology and Probable Means of Spread of Poliomyelitis.—Horace Greeley (*Long Island Medical Journal,* April, 1917) calls attention to the divergencies in the described characteristics of the several organisms which have been isolated by various workers from poliomyelitic material and presents the results of a series of bacteriological studies which tend to show that these divergencies can be reconciled by the fact that the organism is pleomorphic and differs in form and staining properties with the use of various culture media. He was further able to demonstrate that the organism probably belonged to the group causing distemper in dogs, if it was not identical with that organism in certain cases. The organism was also observed to grow well at summer temperature in milk and not to produce any demonstrable change in that fluid. It was also found that pasteurization of milk cultures of the organism did not check its growth and further multiplication. The facts seemed to suggest that this food product was probably the most important means of transmitting the disease, while cats and dogs and even human contacts might be subsidiary methods of its spread. The ability of the organism to multiply readily in milk at summer heat, to resist destruction by pasteurization, and the greater incidence of the disease during the summer and among those age groups in which milk is most used, justify suspicion of that food.

Proceedings of Local and National Societies

THE AMERICAN CONGRESS ON INTERNAL MEDICINE.

Stated Meeting, Held December 28 and 29, 1916.

The President, Dr. Reynold Webb Wilcox, in the Chair.

(*Concluded from Vol. CV, page 1006.*)

Ductless Glands in Dementia Præcox (*Continued*).—Dr. Francis X. Dercum, of Philadelphia, in a further discussion of the subject, said that various writers, among them Tsisch, Lomer, and Kraepelin, had assigned an importance to the sex glands. Lomer, particularly, indicated a disturbance of the internal secretion of the latter, but it remained for Fauser to throw an especially illuminating light on the subject. Fauser found in the serum of dementia præcox patients defensive ferments against the sex glands and against the cortex. It would appear from Fauser's investigations that in dementia præcox a primary dysfunction of the sex glands led to the entrance into the blood of unchanged sex gland protein, and that in the subsequent breaking up of this protein, substances were formed which were injurious to the cortex and which brought about the destruction, the lysis of the latter. The substance which entered the circulation was the internal secretion, the hormone of the sex gland, not of course the germinal product. The blood of male dementia præcox patients digested testicle but not ovary; that of female patients, ovary and not testicle. Fauser's results had been confirmed by a large number of investigators, among them Roemer, Rundschuh, Kafka, Ahrens, W. Mayer, Neue, and F. Fischer. Only in dementia præcox cases could Fauser demonstrate defensive ferments against the sex glands. In cases in which a digestion of the sex glands was unexpectedly found and in which a diagnosis had previously been made of manic depressive insanity or of other functional psychoses, the further clinical course of the cases proved that they were really cases of dementia præcox and that the serological diagnosis had been the correct one. In a number of less definite cases of dementia præcox in which defensive ferments against the sex glands were found only at times, it seemed as though this dysfunction ran parallel with fluctuations in the clinical course. In some cases, again, in a terminal and stationary condition, that is, in cases in which the pathological process had run its course, no defensive ferments were found against either the sex glands or cortex. Not infrequently defensive ferments were also found against the thyroid and against the adrenals. Ludlum, of Philadelphia, had also obtained positive results in the thymus. In the cases which reacted to thymus, the patients were small and light of build, and presented morphological features of arrest and other abnormalities. He regarded them as cases of underactivity of the thymus. Whatever the future might reveal, there appeared to be no escape from the conclusion that in dementia præcox there was a deranged metabolism, an autotoxic state, in which abnormalities of the internal secretions play a leading rôle.

It was very probable further that in dementia præcox toxic action was not limited to the cortex. Many of the symptoms suggested the action of toxins upon the sympathetic and autonomic nervous systems as well. How the latter reacted to poisons, e. g., the various alkaloids, atropine, pilocarpine, morphine, etc., is more or less definitely known. Knowledge likewise covered, though less completely, the action of the internal secretions. Adrenalin, for instance, induced contraction of the bloodvessels, acceleration of the heart's action, dilatation of the pupils, drying of the mucous membranes, lessening of the secretion of the salivary glands, and lessening of the motility and secretions of the stomach and intestines. Similarly the action of the thyroid and pituitary secretions were attended by phenomena that could only be explained by their action upon the autonomic or sympathetic systems. For instance, how full doses of thyroid preparations accelerated the heart's action, increased the secretion from the skin and of the intestinal tract and increased peristalsis, and how markedly pituitary preparations influenced the rate of the heart, blood pressure, and other processes were also well known. That some of the phenomena observed in cases of dementia præcox were referable to mere quantitative increase or decrease of the various internal secretions, and that still others were due to perversions of these secretions were extremely probable. That phenomena pointing to the action of toxins on the sympathetic and autonomic nervous systems were present in dementia præcox could not be denied. There were the phenomena presented by the circulatory apparatus, the digestive tract, and such other very special forms of apparatus as the iris. In the recognition of the facts lay the explanation of many of the symptoms. Among the latter were atonic indigestion, constipation, and dryness of the digestive tract, phenomena presented by the circulation, alteration of cardiac rhythm, fall of blood pressure, pallor, lividity, dryness, moisture, or other conditions of the body surface, dilatation or other anomalies of the pupils, and other symptoms. The point which should be emphasized was that these phenomena must be referred to a toxic action, an action which expressed itself through the autonomic or sympathetic nervous systems. The last mentioned fact acquired additional significance in studies in mental diseases when it was recalled that it was through this system that the emotions, the affects, mainly found physical expression.

It would appear that the various glands of internal secretion had suffered in the course of the development of the organism, so that their respective functions were subsequently imperfectly and aberrantly performed. It was not at all unlikely that while a number of glands—perhaps the entire chain—were involved in most cases, certain glands by their action, e. g., the sex glands, might dominate the picture; in others again it was the thymus; in still others it was the system of the pituitary, thyroid, and adrenals. In favor of the special rôle played by the thymus was perhaps the fact that de-

mentia præcox patients frequently betrayed in childhood the forerunners of the affection. Kraepelin stated that very frequently, especially in the case of male patients, it was brought to light that as children the patients had been markedly quiet, shy, retiring, had formed no friendships, had lived only for themselves. Again, especially in girls, accounts were received of irritability, sensitiveness, excitability, nervousness, stubbornness, and obstinacy. Then again, a smaller group was noteworthy, mostly boys, in which the children were lazy, disliked work, were unsteady, prone to misdemeanors, held to nothing, and finally became tramps and vagabonds. In contrast to these were others, likewise more frequently met with in boys, who as children were characterized by docility, good nature, great conscientiousness and diligence, were unusually good, and who held themselves aloof from all improper conduct. It was not difficult to correlate the reserve and obstinacy with the later appearing symptom of negativism; the oddities and eccentricities with the subsequent symptom of impulsivity, and the docility, on on the other hand, with the subsequent symptom of automatism at command. It would appear, indeed, that frequently the character, demeanor, and conduct of the child foreshadowed the later appearing symptoms of the dementia præcox and that the affection really had its inception in childhood.

It could be inferred from Kojima's studies that the changes found in the glands of internal secretion, e. g., the abnormalities in their weights, were characteristic of any form of mental disease. However, it must be remembered that Kojima did not study the thymus.

Dr. Harlow Brooks, of New York, said that he had been working recently on the problem of the rôle which he believed the ductless glands played in the picture of collapse which developed so frequently in the infections. Since the group of patients who had formed the basis for this study had come into his service, he had experimentally reproduced the condition in animals, but he considered this of very much less importance than the clinical observation and clinical study. His deductions were that in many of the infections, particularly influenza, aggressive types of tuberculosis, especially those characterized by a high toxic temperature, and many other similar diseases, as pneumonia, the collapse which took place so unexpectedly, suddenly, and oftentimes fatally, was due, not to a degenerative process in the heart muscle, but to a degenerative change in the adrenal tissue. Those who had worked on the histology of this gland knew how difficult it was to form a just idea of the changes that took place because of the great facility with which lesions occurred, especially in the cytoplasm of the adrenal cell. The speaker had tried to bear that well in mind, but in certain instances there could be no question as to the lesion and therefore no question whatever as to the clinical signs which appeared as a result of this lesion. A very brief exposition of the clinical signs was a circulatory collapse manifested mostly by a vary marked hypertension; and where it occurred in hypotensive cases, it was marked by a fall of pulse pressure rather than a fall in pressure as a whole; that is, a drop in the systolic pressure, while the diastolic pressure remained stationary. Another evidence of circulatory collapse was very great tachycardia or bradycardia. Instances in which tachycardia developed one had been taught to think were associated with defect in the secretion of the thyroid, and it was believed that observation of this apparent effect had substantiated this theory. The mental and psychic depression and the changed clinical picture were very striking features of these cases of sudden circulatory collapse which appeared in these complications of the infections. These symptoms had been relieved notably by the artificial administration of the gland which was believed to be at fault.

Another clinical fact was that when one substituted the artificial secretion for the apparently defective secretion of these glands the action of drugs, such as digitalis, camphor, caffeine, and strychnine, in the heart muscle was much more evident. For example, in cases in which large doses of digitalis were given without much effect, when the adrenalin secretion was added a good reaction from the digitalis set in as soon as the adrenalin began to take effect. Such was also true of caffeine and strychnine, although it must be recognized that strychnine was not in itself a true cardiac stimulant, but was at most a muscle excitant, and as such, when added to nature's way of stimulating circulation, could certainly cause a much better effect than when used alone.

Dr. Smith Ely Jelliffe's contribution to the discussion of Doctor Sajous's paper is given in full in the May 26th issue of the Journal.

Doctor Babcock, of Chicago, said that in a number of instances he had been able to satisfy himself certainly that infectious, frequently focal infections, were very important factors in the production of arterial hypertension. Another point which seemed worthy of consideration was in regard to the excessive consumption of protein as a factor in the production of arterial disease. In the digestion of proteins, one of the aminoacids produced, namely, tyrosin, when acted upon by the colon bacillus was changed into tyramine, which increased the blood pressure and stimulated the nervous and muscular fibres.

Doctor Zeublin, of Baltimore, said that hypertension sometimes persisted for years and years before there were any further vascular disturbances. If better attention were paid to the metabolism of proteins in these patients, a better circulation could be gradually produced and a normal efficiency. Every prophylactic means should be taken to help the heart to accomplish its functions.

Dr. Tom Williams, of Washington, said that he agreed with Doctor Jelliffe's statement that one should regard the whole man. Every internist had found failure of psychical adaptation, known as delirium, as the result of infections and intoxications, which was immediately removed when the physical agent which was disturbing the chemical process was removed. It was not known what the disturbance of equilibrium in dementia præcox was, whether chemical, vegetative or psychical, or a condition of reactivity due to Mendelian heredity. It had yet to be explained. How could one reconcile

the fact of failure of psychical adaptation with the recovery from that failure by purely physicochemical measures, such as those quoted by Doctor Sajous? Only by thinking of the whole man as a series of links can one realize that wherever the break was there was failure of adaptation. In certain individuals it might take the form of dementia præcox. If the break were in some failure of chemicovegetative capacity leading to interference with cerebral metabolism, there might still be dementia præcox, in which case the patient's disturbance of symbolism would not be psychical at all. So one came back to the relation of the balance of the endocrine function and the several parts of the metabolism and then regarded the pure psychogenetic disturbances of the individual. One was justified in inferring that dementia præcox was a disorder of physical origin having nothing to do with the psyche proper.

Diagnosis of Duodenal Ulcer.—Dr. John B. Deaver, of Philadelphia, said that the diagnosis of typical duodenal ulcer should not present any difficulties in view of the fact that the symptoms usually appeared in well defined sequence; so well defined indeed that he would not hesitate to diagnose a typical case from a history given by correspondence or over the telephone. The typical case history of duodenal ulcer revealed attacks for years of epigastric discomfort after meals, a fullness and a gnawing, burning sensation rather than pain, with acid eructations coming on from two to six, commonly three or four, hours after meals. This distress rarely appeared after the morning meal, but came on with constant regularity after the heavier meals taken at noon or in the evening, the so called hunger pain at night being one of the distinguishing features of the complaint. No satisfactory explanation had yet been forthcoming as to the rationale of these hunger pains. Subsidence of pain upon eating or taking an alkali, such as soda, was another characteristic symptom. The periodicity of these attacks with intervals of complete well being was emphasized by all authorities. Moynihan stated that they usually occurred in winter and were the direct result of cold. In the speaker's experience, however, the spring and fall seasons were the ones generally mentioned. The patients were usually middle aged males. The physical signs consisted of more or less tenderness and rigidity in the epigastrium and upper right rectus regions. These, however, were of secondary importance as it was the history mainly that counted in the diagnosis of a typical case. Hemorrhage from the bowel or by mouth as evidenced by tarry stools or by occult blood in the vomitus was usually noted in about one third of the cases, and it was a feature in about one seventh of the histories. These patients also showed a low hemoglobin percentage. An excess of hydrochloric acid, generally conceded to be pathognomonic of the disease, was noted in more than one half of the cases; subacidity and normal acidity being about equally divided in the remainder. Hypermotility was an important item in the symptom complex of duodenal ulcer. In a series of fifty-three patients operated on at the German Hospital in Philadelphia a correct preoperative diagnosis was made in all but eight cases. In one instance stone in the common duct was diagnosed in addition to duodenal ulcer and both conditions were found at operation.

But the diagnosis of duodenal ulcer was not always smooth sailing. The atypical variety led into troubled waters. These atypical cases more often simulated appendicitis, especially where the appendix was high, than other conditions from which they could with more or less ease be differentiated, such as gastric ulcer, cholelithiasis, cholecystitis, chronic pancreatitis, and pancreatic lymphangitis. Chronic appendicitis cases frequently presented the same hunger pains as duodenal ulcer, hyperacidity was not unusual, and many showed the same chronicity as in duodenal ulcer. The main difference between the two was in the freedom from discomfort in the duodenal cases between attacks, while in appendicitis the flatulency and discomfort were apt to be constantly present. The patients with appendicular indigestion usually suffered more pain after certain kinds of food, especially starchy foods and red meats. The pain was usually not so severe and radiated downward, the latter being one of the main points in the differential diagnosis. In fact, the appendix was found diseased in so many cases of duodenal as well as gastric ulcer that the latter might be considered secondary conditions. The speaker therefore made it a practice to remove the appendix in practically all cases of gastric and duodenal ulcer. In distinguishing between gastric and duodenal ulcer one might be guided by the time relation of the ingestion of food and the onset of symptoms. It was quite generally conceded that the longer the interval between the meals and the appearance of the pain and the more prompt the food relief, the lower down would the ulcer eventually be found

The radiation of pain, if any, if duodenal ulcer was usually to the right, while in gastric ulcer the pain radiated to the left as a rule. The pain also was apt to be more constant than in duodenal ulcer. Einhorn's bucket had been found useful in some instances in approximating the location of the ulcer with more or less precision, but the writer had not introduced it as a routine procedure in his service at the German Hospital. Vomiting was also more frequently a symptom of gastric ulcer, as was also hemorrhage, the latter being usually in the form of hematemesis, while in duodenal ulcer it was usually melenic.

Cholelithiasis presented more difficulty, but care in taking the history would usually enable the experienced clinician to forecast the true state of affairs. Cholelithiasis was marked by such severe colicky pain with sudden and unaccountable onset and as sudden and mysterious cessation that recognition should as a rule be easy. Lavage would usually cut short an attack of biliary colic, but had no influence on the pain of duodenal ulcer. Chronic cholecystitis very frequently clouded the diagnosis of ulcer; it presented the same chronicity though the attack did not last so long. The pain, hyperacidity, and flatulency were also present, while not infrequently the absence of typical jaundice in cholecystitis and its presence in duodenal ulcer made confusion worse confounded. Symptoms similar to those of chronic pancreatitis or some pancreatic in-

volvement were not rarely met with in duodenal ulcer. The character of the pain in the former condition was moderate, as it was in the majority of duodenal ulcer cases, and there was the same epigastric oppression. A valuable distinguishing feature in the pancreatic disease was in relation to eating or drinking or to the kind of food taken.

Malignant neoplasms in their early stages sometimes simulated the symptoms of gastric ulcer. In atypical cases of this nature nothing short of incision and inspection would enable one to determine the nature of the lesion. A large number of cases of malignant disease of the gastrointestinal tract were due to attempted medical treatment of these gastric and duodenal conditions for prolonged periods of time. In one series of cases three specimens of duodenal ulcer were returned from the pathological laboratory bearing the legend "incipient malignancy."

A serious and more frequent menace presented by duodenal ulcer was perforation and hemorrhage. The operative mortality in these cases was very low, and therefore it seemed unjust to subject a patient with duodenal ulcer to the discomfort and risks of the serious dangers alluded to by avoiding operation, which was incision and drainage of subdiaphragmatic abscess in perforated ulcer cases and in all others posterior gastroenterostomy. In some instances this was the only procedure; in some it was combined with pylorectomy; in some the ulcer was invaginated and in some excised; plication of the duodenum had been done and in cases complicated with cholecystitis a cholecystectomy was performed, combined wth choledochostomy where there was stone in the common duct.

Prognosis of Duodenal Ulcer.—Dr. Max Einhorn, of New York, said that the prognosis of disease ran parallel with its therapeusis; progress in the cure of a malady improved its prognosis. In duodenal ulcer great advances had recently been made in diagnosis as well as in treatment. The outlook, therefore, for patients suffering from a duodenal ulcer was today much brighter and more favorable than in former years. With regard to prognosis, it would be well to divide duodenal ulcers into the following groups: 1, simple duodenal ulcers; 2, duodenal ulcers accompanied by pylorospasm and usually also hypersecretion, alimentary or continuous; 3, duodenal ulcers accompanied by pyloric or movement stenosis, and, 4, duodenal ulcers with recurrent hemorrhages.

In the first group the usual symptoms were epigastric distress two or three hours after meals; sometimes hunger pains; long periods of euphoria alternating with comparatively short periods of suffering. Gastric hemorrhage may have occurred once. This group gave a comparatively good prognosis with the following treatment: some form of rest cure, rectal alimentation, and von Leube-Ziemssen milk diet; or duodenal alimentation; or simply a milk and egg diet and rest in bed for about two or three weeks. Later on, no overexertion should be allowed, either physical or mental, and a general hygienic mode of life should be followed. The oftener the attacks recurred the more doubtful the prognosis became as to a complete cure by medical measures. Operative intervention, gastroenterostomy preferably with pyloric occlusion, offered a rather good prognosis.

In the second group severe pains and frequent vomiting were the chief symptoms. Hypersecretion, either alimentary or continuous, was here constantly encountered. The gastric juice was usually hyperacid. When the pylorospasm reached a higher degree, ischochymia appeared at intervals. The prognosis of this group was quite severe under ordinary methods of treatment, alcoholic, or even the milk diet. Duodenal alimentation gave a better prognosis, but in case it did not produce the desired effect in from two to three weeks, gastroenterostomy with pyloric occlusion should be performed, which usually improved the prognosis.

In the third group ischochymia was constantly present. In cases of beginning pyloric stenosis, duodenal alimentation and then stretching of the pylorus might be tried. The prognosis under this mode of treatment varied in different patients. The condition should be watched and the prognosis made accordingly. If there was no improvement, or if the stenosis was further advanced so that the duodenal bucket failed to pass through the pylorus, gastroenterostomy should be performed. Barring the dangers resulting from surgical intervention, the result was usually very good and the prognosis favorable. In duodenal stenosis situated below the papilla of Vater, bile was constantly found in the stomach or in the vomitus. The treatment required surgical intervention and the progress then became good.

In the fourth group, the predominating symptom was a profuse hemorrhage, hematemesis, melena, or both, which returned periodically and endangered the life of the patient. An interval gastroenterostomy, eventually with pyloric occlusion, gave the best results and rendered the prognosis more favorable. The latter, however, should be done cautiously, as there might be a new hemorrhage even after apparently perfect recovery from the operation, in which event the prognosis became doubtful, more so with each repeated hemorrhage.

In groups two, three, and four the prognosis, when no surgical intervention was undertaken, should not be made too favorable, as there was a possibility of perforation. With the gravity of symptoms the liability of this event increased. Continuous hypersecretion and severe pains frequently preceded perforation, and approximate measures should then be taken in order to make the outlook brighter.

Possible Dependence of Gastric and Duodenal Ulcer on Disturbance of Internal Secretions.—Dr. G. A. Friedman, of New York, said that it had been shown that the experimenter and the clinician had been the real investigators in regard to the origin of gastric and duodenal ulcer and had rendered possible an explanation of the common cause of peptic ulcer in man by a study of internal secretions based on experimental work which seemed to harmonize with clinical experience. Not one of the theories that had been advanced to explain the pathogenesis of ulcer had been accepted as the common cause of ulcer. Briefly mentioned, they were the vascular, the neurogenous, the toxic, and the microbic. A functional disturbance in one structure

might produce pathological changes in another. In seeking the origin of the initial lesion in peptic ulcer there were many strong proofs that led to the conclusion that the lesion was due to a functional disturbance of the nerves supplying the parts involved. This functional disturbance of the nerves might very probably arise from anomalies in secretion of certain ductless glands.

The organs which were supplied with smooth musculature, as the stomach or duodenum, were under control of the vegetative nervous system, the regulation of which was partly independent of the central nervous system. Langley divided this vegetative system into the cranial sacral autonomous group, extended vagus, or the parasympathetic group and the sympatheticus proper. He also showed that the antagonistic physiological relation of both groups existed not only in the heart, where this antagonism was most evident, but was present in the stomach and intestines, where, however, the vagus fibres caused stimulation of the smooth musculature and the sympatheticus inhibition of peristalsis and secretion. Langley's teachings were strengthened by the researches of H. H. Meyer, who showed that certain drugs had a selective action upon the autonomous nervous system and also upon the sweat glands. Atropin paralyzed ths system. Adrenalin, however, had been shown to have a stimulating effect on the sympathetic nerves.

The vegetative nerve system supplied the glands of internal secretion as well as the viscera. The stomach was supplied by the terminal branches of the vagus. The duodenum was largely supplied by the sympathetic fibres and by some of the vagus fibres. The adrenals obtained their nerve supply almost entirely from the sympathetic through the splanchnic nerve. The thyroid, however, had a double innervation, the sympathetic and the vagus. The pituitary body might be excluded from consideration here since the secretion of this gland exerted its influence upon tissues innervated by the pelvic nerve. Vegetative stigmata were actually present in the majority of individuals suffering from gastric and duodenal ulcer. Clinical experience showed that patients suffering from chronic peptic ulcer might be divided into two groups: 1, those in whom the organic element without apparent nervous manifestations was evident; at operation ulcer was usually found; 2, those in whom the nervous element was so predominant that it was often difficult to eliminate the organic element as the chief cause of trouble. At operation, ulcer was found, but usually the result of the operation was not beneficial.

The younger the individual afflicted with peptic ulcer the more numerous were the vegetative stigmata. The complete absence of symptoms and signs pointing to a disturbed equilibrium of the vegetative nervous system might be mainly noted in the fifth or sixth decade of life. But even in old people in whom the first symptom of ulcer dated back twenty or twenty-five years, one would elicit the history of previous nervous symptoms which might be interpreted as evidence or vegetative disturbance.

When one of the glands, for instance, the thyroid or adrenal, had been stimulated by the vegetative nerves and kept under its influence abnormally, there might be a reaction, and the nerve itself might become influenced through the disturbed activity of the gland. Since, therefore, a disturbance in the vegetative nerve, vagus, or sympatheticus, may lead to disturbances in the function of the thyroid or adrenal, and since there was a reciprocal reaction between them, a minor degree of disturbance in these glands might show its influence upon the nerves, and the result of such influence might become evident clinically by pathological changes in the structures supplied by the nerves affected and by the production of the symptoms and signs of vagotonia or sympatheticotonia. The mode by which the ductless glandular system might influence the excitability of the vegetative nerves was not known, but it was probably produced through the agency of hormones. This had been established with certainty in regard to adrenalin and it was possibly true of the other internal secretions.

That an excess of thyroid secretion might affect the mucous membrane of the stomach by producing erosions or acute ulcers was proved in two dogs and four rabbits by subcutaneous and intravenous injections of dessicated thyroid gland for about a week. It was also found that injections of adrenalin administered to dogs intravenously, subcutaneously, or intramuscularly for about one to two weeks in doses not exceeding three milligrams of the usual commercial solution—1 : 1000—were liable to cause lesions, erosions, or superficial ulcerations in the duodenum. This experiment also showed that adrenalin might have a preferential action upon the duodenum, probably because of its rich sympathetic nerve supply, which was the secretory nerve of the adrenals. After one sided thyroidectomy in dogs and in rabbits, lesions or ulcers were found in the duodenum more frequently than in the stomach. Occasionally ulcers were found in both and sometimes in the jejunum. In the duodenum of rabbits and guineapigs and in one dog, lesions were found also after onesided adrenalectomy, the unextirpated adrenal becoming hypertrophied.

Adrenal insufficiency caused in various species of animals lesions or ulcers in the stomach. An excess of thyroid gland was probably responsible for the gastric lesions in three animals out of the four experimented upon. Thyroid hypofunction caused the appearance of duodenal and gastric lesions. An excess of adrenalin produced by repeated injections of the drug led to the appearance of lesions in the duodenum of dogs and rabbits. The simultaneous production of adrenal and thyroid hypofunction did not lead to any lesion in the stomach or the duodenum of rabbits. When after removal of one adrenal the other became hypertrophied, lesions were seen in both viscera of rabbits.

From these experiments it would seem probable that gastric lesions might be dependent upon adrenal insufficiency as well as upon excess of adrenalin. Gastric and duodenal lesions might be dependent upon the alternating effect of hypofunction and hyperfunction of the adrenals. From all these considerations a correlation of secretions of the thyroid and adrenals seemed to be plausible in the causation of gastric and duodenal lesions in these animals.

Venous Stasis and Colloidal Diffusion as Etiological Factors of Gastroduodenal Ulcer.—Dr. Fenton B. Turck, of New York, said that the peptic ulcer bearing area located within a few inches of the pylorus, cephalic, and caudal, had excited the most intense curiosity and interest since the earliest discovery of ulcer. The prevailing conception that the gastric secretion determined this location faded away under experimental observation. In experimental ulcers increased gastric secretion was never found. A greatly diminished secretion of hydrochloric acid and the ferments was the rule.

The speaker's own experiments recently had shown that there was a diffusion of bacteria from the intestinal lumen into the wall at different levels of the alimentary tract. The laws that governed the passage of the bacteria were those of a colloidal suspension passing through a filter. The microorganisms did not enter the bloodvessels or lymph channels, but made their way between cells of the mucosa, crossing the muscularis mucosa, passing into the interstitial tissues of the submucosa. Meeting antibodies in this zone, the bacteria were either destroyed, or their multiplication prevented by the antibodies formed in this area. Bacteria that were not destroyed in this submucous tissue, diffused along the walls between the muscular coat and the mucous membrane, passing in the cephalic direction. The laws that governed the direction that the bacteria took could not always be understood. While passing upward in the direction of the venous and lymphatic channels, bacteria were never found in the lymph or venous streams, but migrated or filtered between the connective tissue cells. When the bacteria finally reached the region of the pyloric orifice the stream was stopped here.

The conditions that allowed the bacteria to filter into the walls of the intestinal tube were many. The most important and determining factor was the alteration in the venous circulation of the intestinal tract. Atony of the intestinal walls associated with venous stasis was one of the important causes which permitted filtration of bacteria. Obliteration of the lumen of the intestines by ligation at different points was effective in causing filtration of bacteria, but this filtration depended upon the degree of the disturbance of the circulation more than upon the mere obstruction. Trauma, catarrhal states of the mucosa, and inflammation did not necessarily favor the filtration of intestinal bacteria. If vessels were tied off to produce a stagnation of the blood supply, the other changes which took place, leucocytosis, marked edema, round cell infiltration, etc., were not so effective in determining the passage of the bacteria in the walls as splanchnic venous stasis induced by shock, anaphylaxis, and other less violent conditions that induced venous stasis.

The penetration of the bacteria was not diffuse, but occurred at selective points along the tube. The laws that governed the selection of the exact point where bacteria would filter through were analogous to the relation of a colloidal suspension to a colloidal substratum, or, in other words, as an adjustment of the filtered substance to the pores of the filter. The ileum is the most favorable area for bacterial migration of any segment of the alimentary tract. The bacteria that passed into this submucous zone often showed immediate bacteriolysis on crossing the muscularis mucosa. Specific antibodies were evidently formed in the submucous zones because of the destruction of the filtered microorganisms. Certain intestinal microorganisms, such as the colon bacilli group, coming in contact with the intestinal secretions acquired a relative immunity against the destructive effect of the lymph or serum in the submucous tissue, and therefore escaped bacteriolysis. These continued their journey cephalad to the region of the pyloric orifice; here, meeting much more powerful antibodies, they were destroyed. Their destruction in any accumulated numbers resulted in the destruction of the tissues and necrosis and ulcer formation was inaugurated. It was shown by titration of the blood serum with the suspension of cell substance that, using anaphylaxis as the index, the cell substance was two hundred to a thousand times more powerful in antibodies than the blood serum of the same animal.

The fact that ligation of the pyloric area caused death in the animal, while ligations in the lower tract were not fatal until starvation supervened, was undoubtedly due to the fact of this greater increase in the proteolytic antibodies in the duodenal wall as compared with the lower intestine. Because of the antibodies formed in this submucous zone, the speaker had named it the "zona transformans." Other colloidal suspensions than bacteria would cause reactions and even death. Bateman found that raw egg white would cause intense diarrhea in dogs, cats, rabbits, and men; but if the dose was properly adjusted to the animal, certain antibodies were formed until finally a tolerance occurred.

Letters to the Editors

CREATINE AND CREATININE AS INHIBITORS OF MUSCULAR CONTRACTION

Philadelphia, Pa., *June 5, 1917.*

To the Editors:

I have been greatly interested in Dr. Arthur L. Fisk's article on The Effects of Fatigue Upon the Aged, published in your issue of the 30th ultimo, in which he takes the ground that certain organic products like lactic acid, carbon dioxide, creatine, creatinine, etc., which are the products of chemical changes accompanying muscular contraction which, in turn, become intoxicants to the latter process, and so give rise to fatigue and exhaustion in the animal body. I am clearly of the opinion that Doctor Fisk's conclusion is in the main correct, and nothing is said here in a spirit of criticism, but I desire to draw attention to certain facts which may induce him to modify his decision somewhat in respect to the toxicity of creatine and creatinine in relation to muscular contractility.

In 1887 I took up an experimental study (*Practitioner*, xxxix, No. iv) of the physiological action of creatine, creatinine, sarcine, xanthin, inosite, etc., by transfusing them in solution through the frog's heart, attached to a Kronecker-Bowditch apparatus, and so was able to compare their graphic results with those obtained from a two per cent. saline blood solution on the same organ. The products were as follows: creatine and creatinine in the proportion of one to 1.000 and one to 2.000 saline solution practically supported the amplitude of the heart's contraction as powerfully as was done by a two per cent. blood solution; while the action of sarcine, xanthin, and the other extractives demonstrated themselves as negligible factors in this respect.

Viewed from this fundamental standpoint, it seems reasonable to believe that these two agents do not inhibit muscular movements, but rather belong to that class of substances which give nutritive value and support to the function of muscular contractility, at least in so far as the frog's ventricle is concerned.

THOMAS J. MAYS, M. D.

COMPULSORY HEALTH INSURANCE GETS THE WHOLE HOG.

117 West Seventy-sixth Street,
NEW YORK, N. Y., *July 7, 1917.*

To the Editors:

The NEW YORK MEDICAL JOURNAL is entitled to the thanks of its readers for the honesty and fairness of its report of what took place in the section in Preventive Medicine and Public Health, during the meeting of the American Medical Association in this city in regard to the subject of compulsory health insurance. Although the JOURNAL was not opposed to this measure and did not bear any of the burdens of the struggle which led to its defeat, it has not taken part in the general suppression of the result of this conflict that its lay medical advocates have done since it was defeated, all of whom had previously donated unlimited space to its advocacy. In one respect only is your otherwise admirable editorial on this subject open to criticism; it is in the following statement: "There is also in this section a group of men employed on salaries in public and other service, some of whom were found aligned against the resolution." Not one of these men were known to have favored the resolution against compulsory health insurance. The one whose strongest efforts were directed toward repeating the straddle on compulsory health insurance that was successfully worked at the meeting of the State Medical Society at Utica was declared to be no representative of the private practitioners who would have to bear the burden of this imposition. He urged in reply to this accusation that he was only a "half time" man. The opposition that had been previously balked in the manner above alluded to, however, wanted no halfway measures in this instance, even if these were favored by half time men. In the stronghold of compulsory health insurance itself they wanted victory or defeat, or in common parlance "the whole hog or none." They got the whole hog.

JOHN P. DAVIN, M. D.

A STATE LICENSE STOLEN.

MERIDIAN, MISS., *June 30, 1917.*

To the Editors:

On the night of June 25th my office was entered and my State license stolen. Feeling that this was probably done by some one who contemplates going to some State that reciprocates with Mississippi and under my name secure a license for himself, I deem it my duty, through the JOURNAL to notify the secretaries of the different State boards that they may be on the lookout for such a person.

W. R. GRADY, M. D.

A PHARMACEUTICAL CORPS.

MINNEAPOLIS, MINN., *July 6, 1917.*

To the Editors:

As you may know, the American Pharmaceutical Association has now for some time actively advocated the more adequate and consistent recognition of pharmacy by the Government and has sought representation in the national defence. The American Pharmaceutical Association, as well as other pharmaceutical associations and interests, feels that the army and the navy are entitled to the best pharmaceutical service that the country affords and to that end is advocating the establishment of a pharmaceutical corps. The fact that the American Medical Association is supporting the idea (*Journal American Medical Association*, p. 1822, editorial, and p. 1864, Mr. J. W. England's letter) suggests this line to you to say that the American Pharmaceutical Association and indeed all pharmacists would greatly appreciate it if you saw your way open similarly to indorse the movement by giving publicity among your readers of the merits of the cause which the pharmacists have at heart, not so much in their own interests as in those of the army and the country. I am certain that I am right when I say that it is the patriotism of the pharmacists that prompts their desire to be put into line to give the maximum professional pharmaceutical service. Mr. England's letter is so explanatory that I will not add to it.

I hope you will feel inclined to help this cause, which is intrinsically a medical one.

FREDERICK J. WULLING,
President American Pharmaceutical Association.

FOCAL INFECTION AND CARDIORENAL DISEASE.

3671 BROADWAY, NEW YORK, *July 9, 1917.*

To the Editors:

One of my patients expressed the desire to consult a specialist. I forthwith gave him the addresses of three or four men, leaving the choice unreservedly to him. Briefly stated, my patient is a prosperous business man of sedentary habits who formerly indulged freely in alcoholic stimulants, but who is at present a total abstainer and rather a heavy eater. He is moderately cyanotic, and is dispneic especially on exertion of any kind. His heart is appreciably dilated, especially the right side; its beat is diffuse, irregular, and hardly distinguishable. At times I am able to make out a mitral regurgitant murmur which I am inclined to consider as purely compensatory in nature. His blood pressure is exceedingly erratic, varying between 140 to 180 systolic and 80 to 110 diastolic. The arteries show considerable hardness but no tortuosities as yet. The urine is excessive in quantity, of low specific gravity, and contains a large amount of albumin in addition to casts and other elements denoting renal degeneration. This man is sixty-two years old, is about twenty-five pounds overweight, and I may add that he went through an attack of genuine influenza recently which aggravated his illness very much.

Here is a case which, even after this cursory description, will be easily recognized as a typical cardiorenal one, and has been recognized as such by my consultant. But there comes the point to which I beg to call your attention: My consultant attributes the condition to an oral infection pure and simple, with such an amazing assurance that could leave no room for any doubt. I examined my patient's mouth several times, and even made inquiries of his dentist, a clever and conscientious man, who asserted to me that his teeth are as good as could be expected in a man of his age. I should like to ask if it is necessary to jump at conclusions like the above without a moment's hesitation and with such apodeictical certainty? Did we not lay all ills that human flesh is heir to at the door of flat feet, spurs in the nose, kinks in the intestines, etc.? Were they all fads and is oral sepsis the real culprit? Is this the last word? I doubt it. This truism of today may be dropped by tomorrow, and who knows but that some other ephemeral theory may be bred in some master mind that will condemn oral sepsis to an eternal slumber alongside of its forerunners—aye, even while I am jotting down these lines? There is no reason in the world why we cannot tell our patients to keep their dentists busy and be proof against all diseases, notably against cardiorenal disease and rheumatism—so called. I am apprehenive of being accused of gross ignorance had I omitted the "so called." At times I do not blame some of our most intelligent patients when they turn their backs on our fads and take up others presented to them perhaps in a more pleasing form. I have had cardiorenal cases in toothless people; I have had them in people with bad teeth, and I have had them in people whose teeth were exceedingly well preserved. I lost the best friend I had in this world through this disease, though his teeth were perfectly intact, as white as ivory, and as strong as iron. It was the excessive wear and tear of life in addition to an enormous intake of food that caused his untimely death.

I am well aware that bad teeth, spurs in the nose, kinks in the intestines, and flat feet are not inducive to good health, but I would hesitate to risk the statement that any of these conditions alone or all combined are solely responsible for this disease to which some of our best men fall victims almost as soon as they pass the meridian of life.

CHARLES H. WEISSBERGER, M. D.

After Office Hours

As an example of the interest which the laity is taking nowadays in medical matters we cull from the pages of the New York *Times* for July 8th the following items: Number of Insane at Large Now Less; War Surgery's Aid in Cold Figures; Plea to Mothers to Save Baby Eyes; Says Doctors Fail in Tetanus; Confessing Crime to Doctor, Lawyer, or Cleric; Germans Still Able to Control Drugs Here; Watching the Healthy to Ward Off Sickness; Rigid Physical Tests for Prospective Aviators; Drafting Physicians. This is a total of nearly fourteen columns, which would seem to indicate that the general public take at least a mild interest in our doings.

* * *

Since our country has entered the war the *Masses* has been devoting most of its space to a somewhat hysterical anticonscription, antiWilson, antiwar, antieverything propaganda. The July issue is no exception. Among its gems is a cartoon of a man coming out of the office of a military surgeon and expressing gratitude that he has been found to have heart disease and may drop dead any minute. The inference is of course a sufficiently severe arraignment, of war, but fortunately no such conditions exist. There may be perhaps somewhere in the length and breadth of our land imbeciles who would rather be in danger of dropping dead than serve their country, but the army surgeons will tell you they are rarities. Far more common is it to find a candidate trying to hide some physical defect so that he will be accepted.

* * *

We have commented before in this column on the present day tendency toward occultism. The *Metropolitan* for August features Adventures in Spiritualism, a collection of somewhat banal letters from subscribers, telling what they have seen, heard, or read about Ouija boards and the like. Another instance is before us in the *Century* for July. The leading story has to do with a cheap medium, full of the tricks of his trade, who unexpectedly goes into a real trance and, animated by the soul of her dead brother, tells a fascinated client some marvelous things which, of course, turn out to be true. To make the narrative more real, the magazine's frontispiece shows the medium with his head and shoulders enveloped in something resembling a luminous spider web, supposedly the aura of the dear departed.

* * *

The August *Smart Set* is at hand, full of good things as usual. The editors suggest the following plot for a modern novel: "Herman is in love with Violet, who is married to Armand, an elderly diabetic. Herman and Violet, who are Christians, await with laudable patience the termination of Armand's distressing malady. One day Dr. Frederick M. Allen discovers his cure for diabetes. . . ." We suggest this one: Betty loves Jack, twenty-one, but through family pressure is forced to marry Arthur, aged forty, a solid business man who has won over the family by his talk of tremendous schemes of his which are about to materialize. Arthur proves to have general paresis and is removed to an asylum where he dies. Betty marries Jack. Jack turns out to have an Œdipus complex which renders him incapable of really loving any woman but his mother. Betty runs away with the iceman and has twelve children and goes to the movies every night to see Lou-Tellegen and Wallace Reid and is very happy.

Official News

United States Public Health Service:

Official list of changes in the stations and duties of commissioned and other officers of the United States Public Health Service for the seven days ending July 11, 1917:

Bolten, Joseph, Assistant Surgeon. Relieved from duty at Ellis Island, N. Y., and directed to proceed to Washington, D. C., for duty in the Hygienic Laboratory.

De Saussure, R. L., Assistant Surgeon. Directed to rejoin station at St Louis, Mo., for duty in studies of rural sanitation.

Draper, W. F., Passed Assistant Surgeon. Directed to proceed to Petersburg, Va., on special temporary duty.

Freeman, A. W., Epidemiologist. Directed to proceed to Columbia, S. C., and Atlanta, Ga., on special temporary duty.

Fricks, L. D., Surgeon. Directed to proceed to Jefferson County, Ky., for special temporary duty.

Galloway, T. C., Assistant Surgeon. Directed to proceed to Reedy Island Quarantine Station for special temporary duty.

Grimm, R. M., Passed Assistant Surgeon. Granted one day's leave of absence, July 4, 1917.

McCoy, G. W., Surgeon. Directed to proceed to such towns in Connecticut as may be necessary on special temporary duty.

Ridlon, J. R., Passed Assistant Surgeon. Directed to proceed to Blytheville, Ark, on special temporary duty.

Safford, M. V., Assistant Surgeon. Granted two days' leave of absence from July 5, 1917.

Sayers, R. R., Assistant Surgeon. Relieved from plague duty in New Orleans and assigned to duty on mine rescue car No. 5, with station at Butte, Mont.

Schereschewsky, J. W., Surgeon. Directed to proceed to New York, N. Y., to supervise laboratory studies of industrial fatigue; also directed to proceed to industrial establishments in the northern and middle western States on the same duty.

Wrightson, W. D., Sanitary Engineer. Relieved from duty at Chicago, Ill.; directed to proceed to Louisville, Ky., on special temporary duty; on completion of this duty, directed to proceed to such places in the States south of the Potomac and east of the Mississippi rivers as may be necessary in connection with malaria studies, with station at New Orleans, La.

Births, Marriages, and Deaths

Born.

Schott.—In Cohasset Mass., on Tuesday, July 3d, to Dr. Edward H. Schott and Mrs. Schott, a daughter.

Married.

Gillum-Pearson.—In Northampton, Mass., on Saturday, July 7th, Dr. John Randolph Gillum, of Terre Haute, Ind., and Miss Elizabeth Pearson.

Preble-Phelps.—In Brookline, Mass., on Saturday, July 7th, Dr. William E. Preble, of Boston, and Mrs. Helen Smiley Phelps, of Vicksburg, Miss.

Spitzley-Robinson.—In Detroit, Mich., on Tuesday, July 3d, Dr. William A. Spitzley and Miss Jane Robinson.

Died.

Armendt.—In Owensboro, Ky., on Saturday, July 7th, Dr. Louis G. Armendt, aged sixty-six years.

French.—In Milwaukee, Wis., on Saturday, June 30th, Dr. Samuel W. French, aged sixty-seven years.

Graves.—In Austin, Tex., on Sunday, June 24th, Dr. Richard S. Graves, aged seventy-five years.

Jones.—In Utica, N. Y., on Wednesday, July 4th, Dr. Herbert G. Jones, aged sixty years.

Kane.—In St. Louis, Mo., on Tuesday, July 3d, Dr. John J. Kane, aged seventy-one years.

Kells.—In Columbus, Ohio, on Tuesday, July 3d, Dr. Joseph M. Kells, aged fifty-eight years.

McWhorter.—In Riverton, Ala., on Friday, June 29th, Dr George T. McWhorter, aged sixty-seven years.

Provines.—In Magdalena, N. M., on Monday, June 25th, Dr. William E. Provines.

Rastall.—In Chicago, Ill., on Monday, July 2d, Dr. Frank W. Rastall.

Reagor.—In Shelbyville, Tenn., on Friday, June 29th, Dr. Frank B. Reagor, aged fifty-seven years.

Ridley.—In LaGrange, Ga., on Saturday, July 7th, Dr. Frank M. Ridley, aged sixty-three years.

Schiltz.—In Des Moines, Ia., on Sunday, July 1st, Dr. Nicholas C. Schiltz, aged fifty-one years.

Skinner.—In Suffolk, N. Y., on Friday, June 22d, Dr. Barton Dwight Skinner, aged seventy-three years.

Spelman.—In Anaconda, Mont., on Sunday, July 1st, Dr. James Francis Spelman, aged forty-nine years.

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Miners' Consumption.—A recent investigation of the causes and prevalence of miners' consumption among the metal miners in southwestern Missouri forms the subject of *Public Health Bulletin No. 85*, issued by the U. S. Public Health Service. Miners' consumption consists essentially of a mechanical injury to the lungs due to the prolonged inhalation of hard rock dust. It has been recognized as being prevalent in some American mining districts, particularly in the Joplin zinc and lead districts. It was to determine its actual prevalence, and its relationship to pulmonary tuberculosis, that the investigation was undertaken.

Under an entirely voluntary system 720 miners presented themselves for physical examination, of whom 433 were found to have had their lungs injured by the inhalation of rock dust; of these 103 were also tuberculous, the amount of tuberculosis infection being greatest among the advanced cases of the rock dust disease. Five years' steady work with exposure to flint dust is fairly certain to find the miner in at least the first stages of miners' consumption. If the miner continues his work after being affected, death usually results within ten years from the time that exposure to flint dust commenced. Poor housing conditions were found to be prevalent and to add to the liability of tuberculous infection. Apparently tuberculosis is now occurring at an earlier stage of miners' consumption than was formerly the case. The report lays emphasis on the necessity of preventing the spread of tuberculosis through these cases, especially among miners' children. The fact that miners' consumption is a forerunner of tuberculosis necessitates that it be treated with the same hygienic precautions as is the latter disease. The report concludes that aside from the hygienic supervision of underground working places, the education of the miner against the spread of infection and supervision of miners' children, especially those of consumptive parents, are matters of vital importance.

Babies Dying in Poor Homes.—Low wages of fathers and the gainful employment of mothers away from home accompany an excessive death rate among babies in Manchester, N. H., according to the report on infant mortality in that city which has just been issued by the Children's Bureau of the United States Department of Labor. The study was based primarily on interviews with the babies' mothers. It was absolutely democratic in scope and included all babies whose births were registered during a single year and whose families could be found. Of all the babies studied, one in six—165 per 1,000—had died during the first year of life. There were wide variations in rate between different groups of the population, according to the fathers' earnings, the employment of the mother, the congestion of the home, and the way in which the baby had been fed.

Nearly half of the 1,643 babies had fathers whose earnings were less than $650 a year, and more than one eighth of the babies had fathers earning less than $450 a year. Only one in sixteen, 6.4 per cent., had fathers earning as much as $1,250. The death rate among the babies in the poorest families was more than four times as high as among those in the highest wage group. Low earnings on the part of the father appear to be the most potent reason for the mother's going to work. Where the fathers earned less than $450 a year almost three fourths of the mothers were gainfully employed during some part of the year after the baby's birth. As the fathers' earnings rise the proportion of working mothers falls, until in the group where fathers earned $1,050 or over, less than one tenth of the mothers worked. Keeping lodgers was the chief occupation of those who worked at home and working in the textile mills was a chief occupation of those who worked away from home. The mothers of 267 babies went out to work during the first year of the baby's life and these babies had a death rate considerably higher than those whose mothers worked at home, or were not gainfully employed. The rate is especially high—277.3 per 1,000—among the 119 babies whose mothers went out to work before they were four months old.

The babies were grouped also according to the kind of house in which the family lived. The death rate for babies whose homes were in one family houses was 86.1 per 1,000; in houses containing seven or more families was 236.6 per 1,000. Similarly the rate showed a steady increase according to the number of persons per room. It was 123.3 per 1,000 where the family had more rooms than persons; and 245.9 where there were two or more persons per room. In each economic group the babies who were artificially fed had fewer chances of survival than the babies whose mothers nursed them. But the economic status of the family modifies the influence of feeding, and the difference in the death rates for breast fed babies and artificially fed babies is least striking in the highest income group.

New Publications Received

Proceedings of the Medical Association of the Isthmian Canal Zone for the Half Year January, 1916, to June, 1916. Volume IX, Part I. Panama Canal: The Health Department. Pp. 190.

Dangers in Neckwear. By WALTER G. WALFORD, M. D., Author of *Cerebral Congestion and Tight Neck Clothing*, etc. London: H. K. Lewis & Co., Ltd., 1917. Pp. xi-171. (Price 4/6.)

Congenital Word Blindness. By JAMES HINSHELWOOD, M. A., M. D., F. R. F. P. S., Glasg., Late Surgeon to the Glasgow Eye Infirmary and Lecturer on Opthalmology in the Glasgow Western Medical School. London: H. K. Lewis & Co., Ltd., 1917. Pp. ix-112. (Price 4s.)

Physical Exercises for Invalids and Convalescents. By EDWARD OCHSNER, B. S., M. D., F. A. C. S., President, Illinois State Charities Commission; Attending Surgeon, Augustana Hospital, Chicago. Illustrated. St. Louis: C. V. Mosby Company, 1917. Pp. 54. (Price $.75.)

Roentgen Technic. (Diagnostic.) By NORMAN C. PRINCE, M. D., Attending Roentgenologist to the Omaha Free Dental Dispensary for Children; Associate Roentgenologist to the Douglas County Hospital, Bishop Clark Memorial Hospital, Swedish Immanuel Hospital, St. Joseph's Hospital, and Ford Hospital, Omaha, Neb. With Seventy-one Original Illustrations. St. Louis: C. V. Mosby Company, 1917. Pp. 140. (Price $2.00.)

The Small Community Hospital. A Series of Eight Papers. By JOHN ALLAN HORNSBY, M. D., Editor of *The Modern Hospital.* St. Louis: Reprinted from The Modern Hospital, 1917. Pp. 109.

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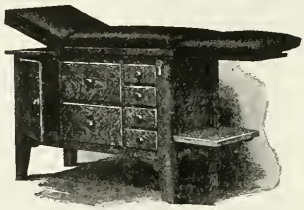

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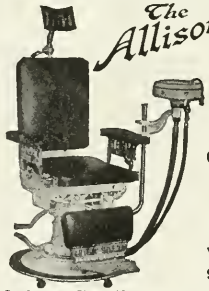

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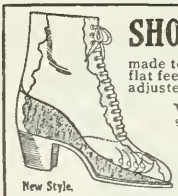

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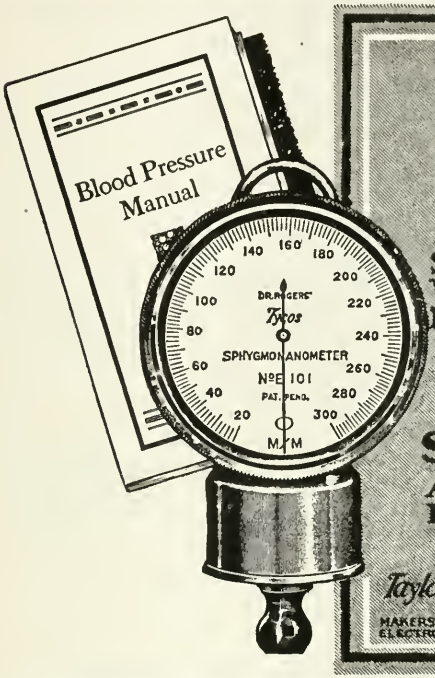

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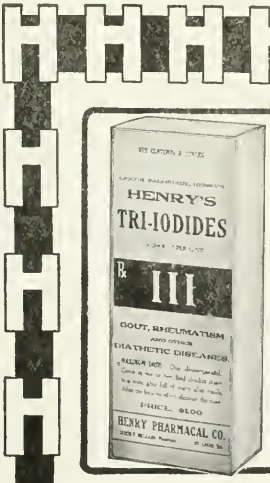

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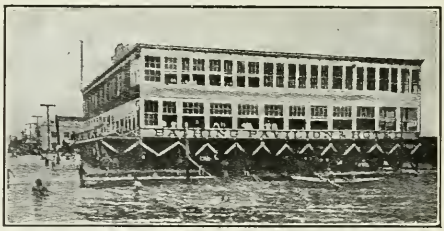

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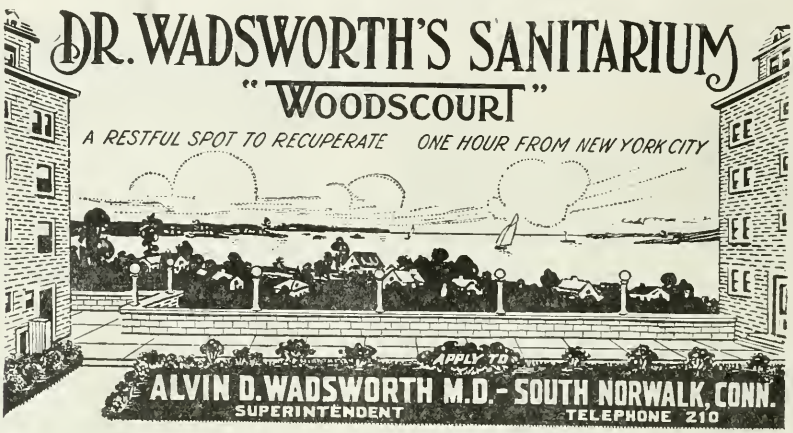
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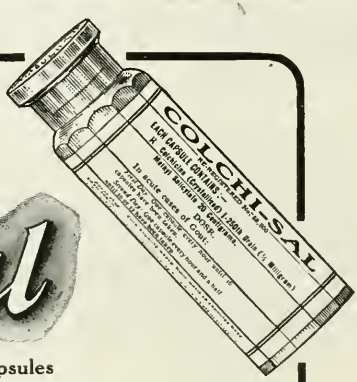

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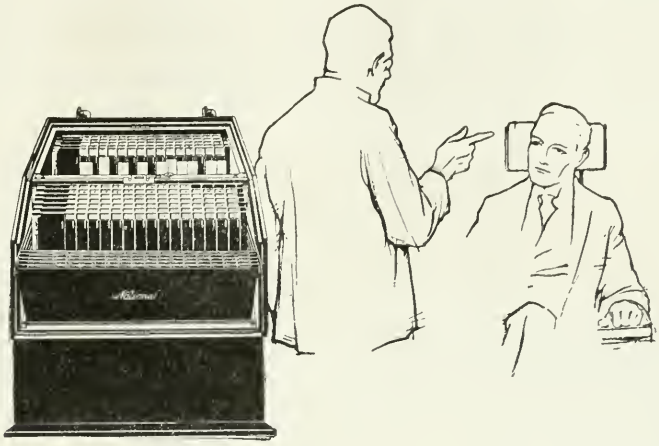

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The National Cash Register Co., Dayton, Ohio

A New Soluble Arsenico-Mercurial Salt, in which As and Hg are dissimulated

ÉNÉSOL

Salicylarsinate of Mercury for intramuscular injections

ITS ADVANTAGES

1. Toxicity very slight, only 1-70th of that of mercuric iodide. Large doses of **As** and **Hg** may therefore be given without causing signs of intolerance.
2. **Énésol** injections are painless, cause no indurations and are well tolerated even in large doses.
3. Therapeutically **Énésol** is equal to any mercurial salt. It combines the specific action of **Hg** and the tonic effect of the **As** in the form of a methyl derivative.
4. Prof. Gailleton at the Antiquailles Hospital, Lyon, tried it in various stages of syphilis (800 injections); the satisfactory results were reported in the "communication of Dr. Coignet to La Société Nationale de Médicine de Lyon, May 30, 1904, and the communication of Dr. Pauly and Dr. Jambon to the Société Nationale de Lyon, October 24, 1904.

Énésol is supplied in ampoules (10 per box) of 2 c. c. of a 3% solution.

The name **Énésol** (ενεσις, to inject) is used to conceal the mercurial composition of the medicament.

CLIN'S CACODYLATE OF SODIUM

An Organic Form of Arsenic may be given for long periods and in large doses, as it has none of the disadvantages of the mineral arsenical compounds.

CLIN'S SODIUM CACODYLATE $As(CH^3)^2O^2NA \times 2H^2O$

Is purer than the commercial cacodylate. The solution for hypodermatic use is neutral. Injections are painless. Each sterilized tube contains 0.05 gram of C. P. Sodium Cacodylate.

CLIN'S DROPS OF C. P. SODIUM CACODYLATE

Five drops contain exactly 0.01 gram of Sodium Cacodylate.

CLIN'S GLOBULES OF C. P. SODIUM CACODYLATE

Gluten coated, easily taken, each contains exactly 0.01 gram of Sodium Cacodylate.

The average daily dose 0.10 gram equals 0.06 gram of arsenious acid or 6.15 grams of Fowler's solution.

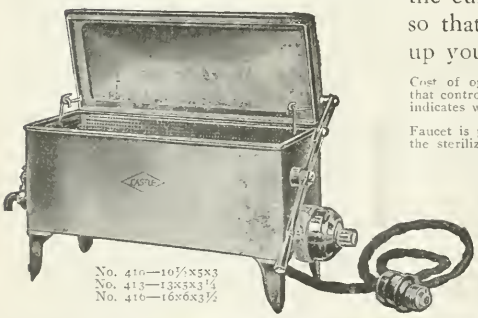
THE CLIN LABORATORIES, Comar & Cie, 20 Rue des Fossés, Saint Jacques, Paris, France

E. FOUGERA & CO., U. S. Agents, New York — Purveyors to the Paris Hospitals

A Sterilizer With Four New Features

Push down on the cool lever—this opens the cover and lifts the instrument tray out of the boiling water. There are no more finger burns from steam and hot water.

The Castle Automatic switch (patented) shuts off the current just before all the water is evaporated, so that you cannot overheat the Sterilizer or burn up your instruments.



No. 416—10½×5×3
No. 413—13×5×3¼
No. 416—16×6×3½

Cost of operation is reduced to a minimum by a three heat control. The switch that controls the heat is right on the end of the sterilizer and has a dial that indicates which heat is turned on.

Faucet is provided to draw off the water and make it unnecessary to disconnect the sterilizer every time it is emptied.

Castle-Rochester Sterilizers are sold by the leading Surgical Instrument dealers. Information can be secured from your dealer or direct from us.

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Makers of the largest line of Sterilizers for physicians, laboratories, hospitals and dentists.